Western Refining Southwest LLC
A subsidiary of Marathon Petroleum Corporation
I-40 Exit 39
Jamestown, NM 87347

March 15, 2023

Mr. Dave Cobrain, Interim Chief
New Mexico Environmental Department
2905 Rodeo Park Drive East, Bldg. 1
Santa Fe, NM 87SOS-6303

RE: Response to Comments
Disapproval - SWMU-1 Closure Plan
Western Refining Southwest Inc., Gallup Refinery
McKinley County, Gallup, New Mexico
EPA ID# NMD000333211

Dear Mr. Cobrain:

Attached please find the response to comments (RTC) (Table 1 attached) contained in the New Mexico Environment Department (NMED) Disapproval letter dated December 14, 2021. Over the past year, Western Refining Southwest LLC (Western) D/B/A Marathon Gallup Refinery, has corresponded with NMED regarding the proposed SWMU-1 Closure Plan. A timeline of the SWMU-1 Closure Plan submittal and subsequent NMED-related correspondence is provided below.

- SWMU-1 Closure Plan submitted by Western - September 30, 2021
- NMED provides Disapproval of Closure Plan - December 14, 2021
- Conference call between NMED and Western to discuss Disapproval comments – January 24, 2022
- Email from NMED (D. Cobrain) discussing sampling requirements for a potential No Longer Contained-In (NLCI) Determination for SWMU-1 waste - June 14, 2022
- Western email response to NMED email - June 22, 2022
- Western Request for NLCI - September 14, 2022
- NMED Approval with Modifications of the NLCI- November 29, 2022
- Western response to Approval with Modifications for the NLCI submitted to NMED - December 19, 2022

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This document also includes Western's RTC for the "Approval with Modifications SWMU-1 Test Pit Installation Letter Report provided by NMED (January 3, 2022). These responses are included in Table 2.

The SWMU-1 Closure Plan shall be referred to hereafter as the SWMU-1 Corrective Measures Implementation Work Plan (CMIWP) as asserted in the NLCI. Included in this submittal are two hard copies and one electronic version of the CMIWP report (Attachment A). A redline-strikeout electronic version of this CMIWP is included to illustrate all revisions that were made to the original SWMU-1 Closure Plan (Attachment B).

If you have any questions or comments regarding the information contained herein, please do not hesitate to contact Mr. John Moore at 505-879-7643.

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction of supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,
Western Refining Southwest LLC, Gallup Refinery

Timothy J. Peterkoski, Director
Environmental Auditing & Processes
Marathon Petroleum Corporation

Attachments

cc: L. Andress, NMED HWB
L. Barr, NMOCD
J. Moore, Marathon Gallup Refinery
L. King, EPA Region 6
K. Luka, Marathon Petroleum Company
H. Jones, Trihydro Corporation

TABLE 1

MPC RESPONSE TO NMED COMMENTS FOR THE "DISAPPROVAL SWMU 1 CLOSURE WORK PLAN" (DECEMBER 14, 2021)

TABLE 1. MPC RESPONSE TO NMED COMMENTS FOR THE "DISAPPROVAL SWMU 1 CLOSURE WORK PLAN" (DECEMBER 14, 2021)

NMED General Comment	MPC Response
Comment 1:	**Response 1:**
While reviewing the submittal, NMED found that some reference documents are not in NMED's administrative record file. In order for NMED to complete its review, all referenced documents must be included in NMED's administrative record. The following references are missing from NMED's administrative record file. a. NMED, 2021. Response to Approval with Modifications, SWMU-1 Revised Investigation Report, Marathon Petroleum Company LP, Gallup Refinery (dba Western Refining Southwest, Inc.) EPA ID# NMD000333211. April. b. Western Refining, 2009. Closure Aeration Lagoons, Western Refining Company Southwest, Inc., Gallup Refinery, EPA ID # NMD000333211, HWB-GRCC-09-003. Regarding the first item listed above, the document was likely issued by the Permittee rather than NMED. The reference appears to contain a typographical error. Correct the error in the revised Plan, as appropriate, or provide an electronic copy of the referenced document. In addition, regarding the second item, it is not clear whether the document referenced as "*RPS JDC. 2009. Closure Plan Aeration Lagoons Gallup Refinery*" listed in Section 8.0 (References), page 34 of 34, second item, is an identical document. If so, remove one of the references from the revised Plan; otherwise, provide an electronic copy of the referenced document. The Permittee must submit an electronic version of the missing documents and/or correct the errors in the revised Closure Plan.	The referenced document "a" was incorrectly referenced. It has been corrected to state the following: Item a. MPC. 2021. Response to Approval with Modifications, SWMU-1 Revised Investigation Report, Marathon Petroleum Company LP, Gallup Refinery (dba Western Refining Southwest, Inc) EPA ID# NMD000333211. April. Item b was submitted to NMED in February 2009 as discussed in NMED's Notice of Disapproval Closure Plan Aeration Lagoons dated May 6, 2009. An electronic version of the document is attached to this response to comment document (Attachment 1A). NMED's response to the document is provided in Attachment 1B. The duplicate reference on page 38 of 38 "*RPS JDC. 2009. Closure Plan Aeration Lagoons Gallup Refinery*" is removed from the revised Corrective Measures Implementation Work Plan (CMIWP).

Note: The SWMU-1 shall be referred to hereafter as the SWMU-1 Corrective Measures Implementation Work Plan (CMIWP) in MPC Responses.

TABLE 1. MPC RESPONSE TO NMED COMMENTS FOR THE "DISAPPROVAL SWMU 1 CLOSURE WORK PLAN" (DECEMBER 14, 2021)

NMED General Comment	MPC Response
Comment 2:	**Response 2:**
In the Executive Summary, page 2 of 34, paragraph 2, the Permittee states, "AL-1 and AL-2 wastes are classified as F-listed (F037/F038) hazardous waste as approved by the New Mexico Environment Department (NMED) on June 30, 2021 (Suzuki 2021.). The reference (Suzuki 2021) does not provide concurrence with the hazardous waste classifications. The reference rather provides concurrence to the *Response to Approval with Modifications, Response to Disapproval Investigation Work Plan Solid Waste Management Unit (SWMU) No. 1 Aeration Basin and SWMU No. 14 Old API Separator*, dated June 11, 2021. Cite a relevant reference or provide a clarification in the revised Closure Plan.	The Executive Summary was modified on page 2 of 38, 2nd paragraph to read " AL-1 and AL-2 contain F-listed (F037/F038) hazardous waste due to malfunctioning aerators as determined by NMED (NMED 2017)." The reference is included in the CMIWP: NMED. 2017. Notification of Determination, Hazardous Waste Management Unit, Aeration Basin, Western Refining Company Southwest, Inc., Gallup Refinery, EPA ID # NMD00333211, HWB-WRG-17-MISC. February. The following citation was removed from the above referenced paragraph: NMED. 2021. Approval with Modifications, Solid Waste Management Unit 1 Revised Investigation Report, Western Refining Company Southwest, Inc., Gallup Refinery, EPA ID # NMD00333211, HWB-WRG-17-MISC. January 5.
Comment 3:	**Response 3:**
In Section 1.0 (Introduction), page 9 of 34, paragraph 5, the Permittee states, "[t]he AL-1 trench will protect both AL-1 and AL-2 by depressing the groundwater surface in the area to reduce the potential for impacted groundwater from contacting clean backfill." Separate phase hydrocarbons (SPH) have been detected in well GWM-1 adjacent to AL-2 since the third quarter of 2015. SPH is present on the groundwater table beneath SWMU-1. In addition, SPH has been detected in well NAPIS-1 located upgradient of SWMU-1. It is NMED's opinion that the SPH detected in well NAPIS-1 will likely migrate toward SWMU-1 in the future. The proposed groundwater interceptor trench may reduce influxes of SPH and contaminated groundwater; however, it may not be able to depress the water table sufficiently to completely eliminate the contact with backfill material. Furthermore, the trench may not adequately address potential issues associated with hydrocarbon vapors emitted from the groundwater beneath SWMU-1. The hydrocarbon vapors may affect backfill	MPC's primary goal is closure of AL-1 and AL-2 with controls. Achieving "clean closure" is not anticipated; therefore, removal of impacted material will be compared to industrial/commercial cleanup standards (first 1 foot [ft] below ground surface [bgs]) and construction worker standards (1 ft bgs to 10 ft bgs). The proposed groundwater interceptor trench will be installed if deemed necessary dependent on site conditions and if the excavation is deep enough to intersect groundwater. The interceptor trench shown in the drawings will be positioned (if needed) within the bottom of the final excavated surface of AL-1. This placement will enable installation of the trench at an approximate final depth of 10 to 12 ft below the existing sludge surface. Hydrocarbon vapor impacts to the backfill are not anticipated to result in exceedances of the industrial/commercial/construction worker

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NMED General Comment	MPC Response
material in the future. Therefore, NMED recommends the installation of liners that are impermeable to both polar and non-polar compounds to prevent the backfill material from being contaminated to maintain the clean closure performance standard, if achievable. Propose to install liners on the excavation floor, if applicable, in the revised Closure Plan.	standards for the clean backfill. Also, no occupied structures are anticipated for this site. If such structures are constructed at a later time, common construction practices, including the installation of a vapor barrier if needed, will be protective of human health.
Comment 4:	**Response 4:**
Section 1.0 (introduction), page 9 of 34, paragraph 6, and 3.0 (SWMU-1 History), page 16 of 34, paragraph 1 state, "EP-1 was determined to not be a listed waste but was sampled for characteristics," and "[b]ased on the waste investigation, EP-1 was confirmed as non-hazardous (MPC 2021)." Based on the analytical data presented in the *Solid Waste Management Unit 1 Revised Investigation Report*, dated January 5, 2021, the Total Petroleum Hydrocarbons (TPH) concentrations in the soil samples collected from pond EP-1 exceeded the applicable soil screening levels and the soils in pond EP-1 appears to be contaminated at levels comparable to those in AL-1 and -2. It is not clear how the soils were classified differently between the Aeration Lagoons and pond EP-1. Comments 3 and 31 of NMED's June 7, 2010 *Second Notice of Disapproval Corrective Measures Implementation Work Plan SWMU-1* state that F037 and F038 waste were likely discharged to EP-1 and EP-2 and the potential listed wastes that could be present in the soils resulting from the various releases to the Aeration Lagoons and EP-1 include D018, F037, F038 and K051 listed wastes. Propose to request a "no longer contained-in" determination to manage the soil removed from EP-1 during closure activities, otherwise, the EP-1 waste must also be treated as hazardous waste and all applicable sections of the Closure Plan must be revised.	Per NMED comment, MPC submitted a "no longer contained-in" determination (NLCI) to manage the soil removed from EP-1 during closure activities (September 14, 2022). The NLCI was approved with modifications by NMED on November 29, 2022. MPC responses to the requested modifications were submitted to NMED on December 14, 2022.
Comment 5:	**Response 5:**
Section 3.2 (Estimated Waste Capacity), page 16 of 34, bullets 1 through 3, and Section 5.2.3 (Waste Excavation), page 21 of 34, paragraph 3 state, "AL-1: Average depth 5.2 ft, surface area 13,789 square feet (ft^2), volume 2,700 yds^3. AL-2: Average depth 5.3 ft, surface area 23,211 ft^2, volume 4,500 yds^3. EP-1: Average depth 5.3	The ponds were excavated into native clay material, and construction plans called for the native clay material to be compacted. While as-builts have not been located, completion of hand-augured borings into and below the sludge encountered a dense clay, which indicates a compacted low permeability clay material underlies these ponds.

TABLE 1. MPC RESPONSE TO NMED COMMENTS FOR THE "DISAPPROVAL SWMU 1 CLOSURE WORK PLAN" (DECEMBER 14, 2021)

NMED General Comment	MPC Response
ft, surface area 58,757 ft^2, volume 11,500 yds^3, [and e]xcavation depth will be determined from field observations of a distinct color change in the clay liners of the ponds. This color change is anticipated to be accompanied by an abrupt change of contaminant concentrations, as documented in the SWMU-1 sampling results report (MPC 2021) and as summarized in Table 1." Comment 4 of the NMED's August 31, 2020 *Disapproval SWMU-1 Investigation Report* directed the Permittee to "proposed to recollect soil samples for mercury analysis or propose to excavate to a depth below the historic water table for maximum soil removal (e.g., more than ten feet bgs) to address potential risk associated with mercury." Potential contamination associated with mercury may not be identified visually and since the Permittee did not collect soil samples for mercury analysis, the proposed excavation depth must be extended to depths of the historic water table. In addition, NMED could not find evidence that the ponds were ever lined; therefore, a color change may not be observable beyond the change from sludge to native soils. Revise the Closure Plan accordingly.	Moreover, the abrupt color change and corresponding abrupt decrease in contaminant concentrations strongly support the assertion that impacts into the clay are limited in depth. These observations were documented in the *Revised SWMU 1 Investigation Report*, January 5, 2021. MPC will perform excavation confirmation sampling as discussed in the SWMU-1 CMIWP and will remove impacted sludge and soil that is above industrial/commercial and construction worker standards. This will include mercury. MPC does not intend to excavate ponds AL-1 and AL-2 to the groundwater depth, given that this depth likely exceeds the depth of SWMU-1 soil impacts given the data and observations presented in the investigation report and historical groundwater depths in the area.
Comment 6:	**Response 6:**
In Section 4.3 (April 2021 Test Pits Investigation), page 18 of 34, paragraphs 1 through 3, the Permittee states, "[t]he Test Pit Investigation Report will be submitted to NMED under a separate cover. Drill cuttings of the test pits were sampled for disposal and indicated non-hazardous soils [and no apparent influence was observed in the monitoring wells during the yield tests, which further indicated low transmissivity." The *SWMU-1 Test Pit Installation Letter Report* was submitted on October 27, 2021; however, the results and conclusions of the test pit investigation discussed in the Closure Plan cannot be referenced or used to make decisions for closure activities because the letter report has not been approved by NMED. All supporting documents included in a closure plan must be approved by NMED. Remove the reference from the revised Closure Plan and include the data directly to support the assertion in the revised Closure Plan. The letter report may be referenced if approved by the submittal of the Closure Plan revision.	The *SWMU-1 Test Pit Installation Letter Report* was submitted to NMED on October 27, 2021. NMED provided MPC with the *Approval with Modifications SWMU-1 Test Pit Installation Letter Report* on January 3, 2022. References are updated to include the approval in the CMIWP. MPC's Responses to Comments provided by NMED in the Approval with Modifications are included at the end of this table.

TABLE 1. MPC RESPONSE TO NMED COMMENTS FOR THE "DISAPPROVAL SWMU 1 CLOSURE WORK PLAN" (DECEMBER 14, 2021)

NMED General Comment	MPC Response
Comment 7:	**Response 7:**
In Section 4.3 (April 2021 Test Pits Investigation), page 18 of 34, bullet 2, the Permittee states, "[g]roundwater levels in wells and test pits surrounding SWMU-1 are generally below the level of the bottom of the sludge in ponds AL-2 and AL-2 (approximate depth of sludge is 5 to 6 ft as determined during SWMU-1 sludge sampling)." The statement is vague and must be clarified with more details about the groundwater level depths at SWMU-1. Provide the following information in the revised Closure Plan: a. The estimated average groundwater depths and elevations at ponds AL-1, AL-2, and EP-1; b. The average ground surface elevations at the berms and bottoms of ponds AL-1, AL-2, and EP-1; and c. The estimated sludge depths and elevations at ponds AL-1, AL-2, and EP-1 Figure 2-2 (SWMU 1 - AL-1 and AL-2 Cross Section) presents depiction of the cross section from NAPIS-1 to TP-1 to support the assertion; however, well GWM-1 located northwestern corner of AL-2 was not used in the cross section diagram. Include the data collected from well GWM-1 in the revised Closure Plan. In addition, the groundwater elevation at well GWM-1 must be referenced as a minimal depth of the excavation at the western boundary of AL-2 and EP-1 because SPH has been detected in well GWM-1. Include the provision in the revised Closure Plan.	a. b. & c. – The requested information is provided in the CMIWP in the form of the revised Figures 2-2 and 2-3. Owing to the variability of these elevations across SWMU-1, the requested information is included in the cross-section figures and their corresponding vertical scales. Well GWM-1 is added to the cross-section depicted in Figure 2-2. It was included in Figure 2-3, which is the cross-section for EP-1 The historical minimum elevation of fluid in GWM-1 is approximately 6,897 ft above mean sea level (amsl), which is approximately 10 ft below the maximum anticipated sludge depth in AL-2. Based on the investigation report results, MPC does not anticipate excavation to this depth to remove AL-1 and AL-2 impacted material. Accordingly, groundwater will not be referenced as a minimal depth of the excavation for SWMU-1. As discussed in Response to Comment 5, excavation will remove impacted sludge and soil that is above industrial/commercial and construction worker standards.
Comment 8:	**Response 8:**
In Section 4.3 (April 2021 Test Pits Investigation), page 18 of 34, bullet 3, the Permittee states, "[a]t a minimum, the seepage rate is likely low enough to control with standard excavation practices, such as a shallow diversion trench installed at the excavation bottom." It is NMED's opinion that the proposed trench may not be able to depress the water table sufficiently to completely eliminate the contact with backfill. See Comment 3 above.	The text in question refers to two separate concepts: 1. seepage that is anticipated to occur during waste excavation (e.g., water entrained within the sludge or precipitation), and 2.potential interception of groundwater beneath SWMU-1. These two points are broken out as follows in following manner on page 20 of 38: • The groundwater levels in the area's monitoring wells, in relation to the higher water levels in AL-1 and AL-2, strongly suggest that seepage from groundwater into the ponds has

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NMED General Comment	MPC Response
	likely not occurred. During excavation, water entrained within the sludge or resulting from precipitation, will be controlled with standard dewatering practices, such as excavating shallow diversion trenches within the sludge or installation of collection sumps. • The proposed groundwater interceptor trench will be installed if deemed necessary dependent on site conditions and if the excavation is deep enough to intersect groundwater. Post closure groundwater management is addressed in Section 5.4.
Comment 9:	**Response 9:**
In Section 5.1 (Dewater SWMU-1), page 19 of 34, paragraph 4, the Permittee states, "spent zeolite catalyst is available and may be utilized as an adsorbent material if needed. Analytical characterization data for this material is presented in Appendix B." The spent zeolite catalyst may be used to stabilize the waste to be transported to the permitted Treatment Storage, and Disposal Facility (TSDF), as approved by the TSDF. However, Appendix B (Zeolite Catalyst Characterization Data) indicates that the concentrations of sulfate, Total Petroleum Hydrocarbons (TPH) diesel range organics (DRO), and gasoline range organics (GRO) in the material are recorded as 12,000, 21, and 24 mg/kg, respectively. NMED is concerned that these constituents may leach into groundwater if the spent zeolite catalyst is used to stabilize the excavation floor prior. Therefore, the Permittee must propose other adsorbent materials to stabilize the excavation floor that do not have the potential to leach constituents into the groundwater, if warranted. Revise the Closure Plan accordingly.	The text referring to zeolite has been moved to Section 5.2.2 Auxiliary site Preparation – Burrow Area, first paragraph. Zeolite will not be used to stabilize the excavation floor. Depending on waste destination, zeolite may be used as a sorbent material to reduce moisture content of the sludges after they are excavated for disposal. If needed, MPC will utilize borrow soil or berm soil to stabilize the excavation floor. The reference to zeolite has been modified in Section 5.2.2, page 22 of 38, as follows: "Alternatively, spent zeolite catalyst is available and may be utilized as an adsorbent material that would be incorporated post-excavation if needed."
Comment 10:	**Response 10:**
Section 5.2.2 (Auxiliary Site Preparation), page 20 of 34, paragraph 4, and Section 5.5.1 (Backfill Sampling), page 28 of 34, paragraph 7, state "[t]he Refinery's onsite borrow pit will be utilized to source backfill soil [and is] anticipated to be the currently existing borrow pit which provides a source of clay-rich soil." Groundwater and SPH	Soil samples were collected from the borrow pit in 2022 and were analyzed for the requested analytes. The sampling event is discussed in Section 5.6.1 – Backfill Sampling, and laboratory data are included in Appendix C of the revised CMIWP.

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NMED General Comment	MPC Response
were observed on the surface of the Borrow Pit area in 2020. Therefore, the Refinery's onsite borrow pit must not be utilized as a source of backfill material. Clean backfill material must be used to backfill the excavation. Revise the plan accordingly.	Review of the data indicates that much of the Borrow Pit soil is acceptable for use as backfill. No soil will be removed from the elevation of the hydrocarbon seep within the Borrow Pit.
Comment 11:	**Response 11:**
In Section 5.2.4 (Berm Excavation), page 21 of 34, paragraph 4, the Permittee states, "the upper 1.5 ft of berm soil will be excavated and segregated for composite soil testing to determine suitability for use as clean backfill. Soil will be tested for the following constituents: VOCs, SVOCs, and metals at a frequency of one sample for every 100 yd^3 of segregated material." The March 31, 2020 *SWMU-1 Investigation Report* indicates that the berm soils may also be contaminated with TPH-GRO, DRO, and motor oil range organics (MRO). The berm soil samples must be analyzed for TPH-GRO, -DRO, and -MRO. The berm soils may not be acceptable for use as backfill. Revise the Closure Plan accordingly.	This berm soil will be stockpiled and tested before use as backfill. The CMIWP has been modified in Section 5.2.4, page 24 of 38, as follows: "Soil will be tested for the following constituents: VOCs, SVOCs, metals, and TPH-GRO, -DRO, and -MRO…".
Comment 12:	**Response 12:**
In Section 5.3.1 (Confirmation Soil Sampling Frequency), page 23 of 34, bullet 2, the Permittee states, "[a]ll sidewall confirmation samples will be collected from two locations: one soil sample will be collected from the sidewall at the base of the excavation, and the other soil sample must be collected approximately five ft below the base of the average water line. In areas where these dimensions are separated by less than three vertical ft, then only one sidewall sample will be collected from the base of the excavation." Since the bottom of the excavation will likely reach a depth below the historic water table, as directed by Comment 5, two soil samples will need to be collected from most of the sidewall sampling locations. In addition, since the bottom of the excavation will reach the historic water table, groundwater may accumulate on the excavation floor. It may be necessary to install monitoring wells once excavation and backfilling is complete. Revise the Closure Plan accordingly.	The referenced section (Confirmation Soil Sampling Frequency) is now numbered 5.4.1 (page 26 of 38). The sampling frequency will be modified if the excavation encounters groundwater. MPC disagrees that monitoring wells are required once excavation and backfilling are complete. The size of the excavated area is less than 1 acre. Multiple wells exist upgradient and downgradient of SWMU-1. In addition, the interceptor trench will be constructed, if necessary, within AL-1 and EP-1 which will provide additional control of groundwater elevations in the area.

TABLE 1. MPC RESPONSE TO NMED COMMENTS FOR THE "DISAPPROVAL SWMU 1 CLOSURE WORK PLAN" (DECEMBER 14, 2021)

NMED General Comment	MPC Response
Comment 13:	**Response 13:**
In Section 5.3.1 (Confirmation Soil Sampling Frequency), page 24 of 34, bullet 1, the Permittee states, "[confirmation samples will be analyzed for] TPH-GRO and TPH-DRO, USEPA Method 8015." Since the TPH-MRO concentrations in the samples collected from the ponds also exceeded applicable screening level, all confirmation samples must also be analyzed for TPH-MRO (or TPH-DRO extended). Revise the Closure Plan accordingly.	The referenced section (Confirmation Soil Sampling Frequency) is now numbered 5.4.1 (page 26 of 38). The CMIWP has been updated to include TPH-MRO. Section 5.4.1, page 27 of 38, bullet 7 on the page, now states, "confirmation samples will be analyzed for TPH-GRO, TPH-DRO, and TPH-MRO, USEAP Method 8015."
Comment 14:	**Response 14:**
In Section 5.3.2.2 (Sample Methodology), page 25 of 34, paragraph 2, the Permittee states, "[t]he material will be placed [sic] directly from the trowel or other appropriate sampling device into a clean glass jar. The jar will be filled completely to minimize headspace (by tamping during filling), and immediately sealed with a Teflon-lined lid." Soil samples collected for VOC analyses must be obtained using Encore or equivalent sampling devices or other method to collect undisturbed samples approved by NMED. Revise the Closure Plan accordingly.	The referenced section (Sample Methodology) is now numbered 5.4.2.2 (page 28 of 38). Section 5.4.2.2, page 28 of 38, last paragraph, has been revised to state "Samples collected for VOC analyses will be obtained utilizing Encore or equivalent sampling devices to collect undisturbed samples."
Comment 15:	**Response 15:**
In Section 5.3.2.2 (Sample Methodology), page 25 of 34, paragraph 4, the Permittee states, "[t]he instrument will be inserted into the bag and the reading taken. All samples shall be screened at as close to the same temperature as possible to obtain consistent results. After collecting the reading, the material will be transferred from the bag into a clean glass jar as described above." Since some VOCs can potentially be volatilized and lose from the soil during the collection of PID/FID readings, the same soil used for the collection of PID/FID readings must not be used as confirmation samples. All confirmation samples must be collected separately in a manner that is representative of field conditions. See Comment 14 above. Revise the Closure Plan accordingly.	The referenced section (Sample Methodology) is now numbered 5.4.2.2 (page 28 of 38). Field screening samples are always collected as a separate volume from laboratory samples. The CMIWP text has been modified in Section 5.4.2.2, page 29 of 38, paragraph 2, to address field screening issues. Additionally, the following statement has been added to the first paragraph of Section 5.4.2.2 page 28 of 38 "All soil samples for laboratory analyses shall be obtained from undisturbed cores or freshly excavated soil that is representative of field conditions." to clarify the concern.

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NMED General Comment	MPC Response
Comment 16:	**Response 16:**
In Section 5.3.2.2 (Sample Methodology), page 25 of 34, paragraph 5, the Permittee states, "[s]ampling devices will be decontaminated between sampling locations using a four-stage decontamination system consisting of a two detergent/water washes and two deionized water rinses." Include a description about how the fluids generated by the decontamination process will be managed in the revised Closure Plan.	The referenced section (Sample Methodology) is now numbered 5.4.2.2 (page 28 of 38). Fluids will be managed in the Refinery's wastewater treatment plant. The CMIWP has been modified in Section 5.4.2.2, page 29 of 38, paragraph 4, to state, "Decontamination fluids will be containerized and treated in the Refinery's WWTP."
Comment 17:	**Response 17:**
In Section 5.3.5 (Reporting Limits), page 27 of 34, paragraph 7, the Permittee states, "[f]or non-residential properties (e.g., the Refinery), the soil screening levels must be protective of commercial/industrial workers throughout the upper one foot of surface soils and construction workers throughout the upper one foot of surface soils and construction workers throughout the upper 10 ft based on NMED criteria." The Permittee must utilize the residential soil screening levels to guide the soil/sludge removal. If residential soil screening criteria cannot be met, non-residential soil screening criteria may be used for the guidance of removal; however, the Permittee will be required to implement institutional controls at the time of corrective action completion (i.e., post closure care). Revise the statement accordingly.	The referenced section (Reporting Limits) is now numbered 5.4.5 (page 31 of 38). Section 5.4.5, page 31 of 38, first paragraph, now reads as follows: "For non-residential properties (e.g., the Refinery), the soil screening levels must be protective of commercial/industrial workers throughout the upper one foot of surface soils and construction workers throughout the upper 10 ft based on NMED criteria. As a result, institutional controls (i.e., post closure care) will also be implemented as part of the corrective action.

TABLE 1. MPC RESPONSE TO NMED COMMENTS FOR THE "DISAPPROVAL SWMU 1 CLOSURE WORK PLAN" (DECEMBER 14, 2021)

NMED General Comment	MPC Response
Comment 18:	**Response 18:**
In Section 5.4 (Installation of Groundwater Interceptor Trenches for Future Control of Groundwater), page 28 of 34, paragraph 3, the Permittee states, "[b]ased on the depth of local groundwater, the expected depth of this excavation is approximately 4 to 5 ft bgs at the bottom of the excavation. A cross section of the interceptor trench is also shown on Drawing Sheet 4." According to Drawing Sheet 4, the trench depth is designed to be five feet below the existing ground surface. The gauging data collected from the NAPIS and KA wells indicate that the depth of groundwater would be deeper than five feet below groundwater surface (bgs) at the location. Therefore, groundwater will not likely be intercepted at the proposed depth of the interceptor trench (5 feet bgs). The depth of the interceptor trench must be lower than the depth of the excavation or the historic water table at a minimum. Revise the proposed depth of the trench to ensure that groundwater is intercepted int he revised Closure Plan.	The referenced section (Installation of Groundwater Interceptor Trench for Future Control of Groundwater) is now numbered 5.5 (page 31 of 38). Drawing Sheet 4 – cross-section of interceptor trench detail was modified so that the depth is five feet below the final excavated surface. This will lower the effective depth of the trench to approximately 10 feet below the existing ground surface.
Comment 19:	**Response 19:**
In Section 5.5.1 (Backfill Sampling), page 28 of 34, paragraph 7, the Permittee states, "[s]oil will be tested for the following constituents: VOCs, SVOCs, and metals." The backfill soil samples must be analyzed for TPH-GRO, -DRO, and -MRO. In addition, clarify the Closure Plan to state that discrete soil samples will also be collected and analyzed for VOC analysis (see Comment 14 above). Revise the Closure Plan accordingly.	The referenced section (Backfill Sampling) is now numbered 5.6.1 (page 32 of 38). Backfill sampling has been performed and is discussed in Section 5.6.1 (page 32 of 38), with laboratory analyses provided in Appendix C of the revised CMIWP.

TABLE 1, ATTACHMENT 1A

2009 CLOSURE PLAN AERATION LAGOONS GALLUP REFINERY
WESTERN REFINERY
(FEBRUARY 2009)

RPS JDC

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Closure Plan
Aeration Lagoons
Gallup Refinery

Regulated Unit EPA ID# NMD000333211
HWB-GRCB-06-001

Western Refining Southwest, Inc.
Gallup, New Mexico

February 2009

Ed Riege
Environmental Manager

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Senior Consultant
RPS JDC, Inc.

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List of Sections

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Section 1
Introduction

The Gallup Refinery is located approximately 17 miles east of Gallup, New Mexico along the north side of Interstate Highway I-40 in McKinley County. The physical address is I-40, Exit #39 Jamestown, New Mexico 87347. The Gallup Refinery is located on 810 acres.

The Gallup Refinery is a crude oil refinery currently owned by Western Refining Southwest, Inc., which is a wholly owned subsidiary of Western Refining Company, and it is operated by Western Refining Southwest – Gallup Refinery. The refinery was most recently owned by Giant Refining Company. The Gallup Refinery generally processes crude oil from the Four Corners area transported to the facility by pipeline or tanker truck.

The Gallup Refinery has an approximate crude oil refining capacity of 23,000 barrels per day. Various process units are operated at the facility, including crude distillation, reforming, fluidized catalytic cracking, alkylation, isomerization, sulfur recovery, merox treater, and hydrotreating. Current and past operations have produced gasoline, diesel fuels, jet fuels, kerosene, propane, butane, and residual fuel.

This Closure Plan addresses the closure of the aeration lagoons, which consist of two separate manmade earthen lagoons connected in series. The two aeration lagoons were constructed in 1987 and have been in continuous operation since that time. The aeration lagoons cover an area approximately 275 feet by 150 feet and have an estimated holding capacity of 1 million gallons. Two benzene air strippers are located between the refinery's API separator and the aeration lagoons to prevent characteristically hazardous waste from being discharged to the aeration lagoons. In addition to being identified as a SWMU, the lagoons are subject to the jurisdiction of the New Mexico Oil Conservation Division (OCD), which regulates potential releases under the OCD Discharge Permit (GW-032).

Monitoring data of the effluent from the air strippers, which discharges into the inlet aeration lagoon, and flows into Aeration Lagoon #2 has indicated that concentrations of benzene suspected to be above the toxicity characteristic (TC) regulatory threshold of 0.5 milligrams per liter (mg/l) have entered these impoundments. Since Western Refining does not desire to operate these impoundments as hazardous waste surface impoundments the aeration lagoons

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will be cleaned out to remove all hazardous waste, hazardous constituents, decomposition products, and leachate. The land-based aeration treatment units will be replaced with tank-based treatment units.

This Closure Plan is submitted pursuant to the requirements of Provision IV.B.9 of the Post Closure Care Order issued by the NMED on August 17, 2000 and the requirements of the OCD Discharge Permit issued August 23, 2007. The closure standard for Aeration Lagoon #1 and Aeration Lagoon #2 is based on 40 CFR §265.111 (Closure Performance Standard), which requires that the owner or operator must close the facility in a manner that:

(a) Minimizes the need for further maintenance, and

(b) Controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere.

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Section 2
Wastewater Treatment Unit Description and Operation

2.1 Environmental Regulatory Activities

All oil refineries produce process wastewater, which today must be managed in accordance with a variety of environmental requirements intended to assure adequate and appropriate protection of public health and the environment. Two federal regulatory programs [the Clean Water Act and the Resource Conservation and Recovery Act (RCRA)] have major significance for Gallup Refinery process wastewater. The State of New Mexico has primacy over the RCRA program. In addition, there are other state regulatory programs with varying applicability, including those administered by New Mexico Oil Conservation Division (OCD).

Initially, beginning in 1972 under the Clean Water Act regulatory program, EPA promulgated petroleum refinery wastewater management requirements pursuant to the NPDES permit program. The principal federal regulations implementing this CWA program as it applies to petroleum refineries are found at 40 C.F.R. Parts 122 and 419. The Gallup Refinery, like other oil refineries impacted by 40 C.F.R. Part 419, had implemented a series of process wastewater treatment operations, including primary treatment of wastewaters with an oil/water separator and secondary biological treatment in wastewater ponds to further reduce organics in the petroleum refinery wastewater. The two ponds where such biological degradation of organics occurs at the Gallup Refinery are referred to as Aeration Lagoon #1 (the inlet aeration lagoon) and Aeration Lagoon #2.

The RCRA regulations promulgated by EPA on November 19, 1980 identified hazardous wastewaters and sludges generated by petroleum refineries. Initially, these regulations applied only to certain sludges created by petroleum refinery wastewater management, such as API oil/water separator sludge which was listed as K051 hazardous waste. In 1990, a significant revision to these regulations identified most petroleum refinery process wastewater as benzene characteristic hazardous waste (D018). The listing of primary and secondary sludges (F037/F038) by EPA as hazardous (effective in 1991) effectively mandated a certain level of biological treatment and retention time in the biological treatment impoundments at the Gallup Refinery to exclude the sludges from the new listings. The compliance strategy employed aggressive biological treatment (ABT) of wastewaters in the aeration lagoons, followed by

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management in evaporation ponds. As discussed in Section 3.0, additional upgrades to the wastewater treatment system are planned that will eliminate the need for the aeration lagoons.

2.2 Surface Impoundment Operations

The refinery process wastewater generated (approximately 100 gallons per minute (gpm)) as measured in March 2006) at the Gallup Refinery is managed first by physical treatment in an API separator, then the volatile components are removed via benzene air strippers and the final treatment (biological) occurs in two ABT lagoons. The ABT units are earthen surface impoundments with natural clay as a bottom liner.

An investigation of the aeration lagoons was conducted in April 2008 to characterize the volume and nature of sediments in each basin. A copy of the report of the investigation prepared by Trihydro Corporation is included in Appendix A. According to the report, the inlet aeration lagoon (Aeration Lagoon #1) had an average water depth of 2.1 feet. Based on an average water depth of 2.1 feet and a surface area of about 15,700 square feet the total volume is approximately 246,000 gallons. At 100 gpm, the holding time in the pond is 1.7 days. The impoundment is equipped with three, 15-horsepower aerators sized to prevent F037 waste generation through high rate aeration.

Wastewater from Aeration Lagoon #1, which has already been subject to aggressive biological treatment, is routed to Aeration Lagoon #2 through an overflow pipe. The second ABT unit is an earthen lined impoundment that is operated in the same manner as Aeration Lagoon #1. Aeration Lagoon #2 has an average water depth of 2.0 feet in depth with a surface area of approximately 24,400 square feet. The total volume is approximately 365,000 gallons. Aeration Lagoon #2 is equipped with two 15-horsepower aerators and has a wastewater retention time (at 100 gpm) is 2.5 days.

2.3 Assessment Activities

Soil sampling was conducted near the aeration lagoons during the RFI in the early 1990s. Based on the analytical results from the samples, the EPA concurred on January 7, 1994 with Giants' determination that no significant impact had occurred and thus no further action was required for SWMU #1. EPA requested that on-going soil sampling be conducted at the lagoons every two years, which was later reduced to a frequency of five years. The first "monitoring" event was completed in October, 1996. Soil samples were collected from depths of four feet to 20 feet below ground surface with some borings angled to allow collection of samples beneath

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the lagoons. Neither volatile nor semi-volatile organics were detected in 25 of the samples. Two samples collected near the side wall of the inlet aeration lagoon at a depth of four feet had very low concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX). The highest concentration was 2.2 mg/kg of xylenes. Copies of EPA's letter dated January 7, 1994 and a subsequent facsimile dated March 15, 1996, which notes the changed monitoring frequency to five years, are included in Appendix B[1].

Two ground water monitoring wells (GWM-1 and GMW-2) were installed down-gradient of the aeration lagoons in 2004. Analyses of ground water samples collected at GWM-1 and GMW-2 have indicated only low concentrations of constituents such as BTEX and methyl tertiary butyl ether (MTBE) that would indicate a potential for historical releases from the lagoons. GWM-3 is also located nearby, adjacent to Evaporation Pond No. 1. Both GWM-2 and GMW-3 were dry during the 2007 annual sampling event.

The sludge/sediments that have accumulated in the two lagoons were recently characterized in preparation for closure and the report documenting these activities is included in Appendix A. Based on this investigation, there appears to be two distinct layers of sludge/sediment in the aeration lagoons. The upper layer ("soft sediment") is described as a soft, loose, and unconsolidated, as opposed to the lower layer ("hard pack sediment") that is more compact and dense.

The volumes of sediment were estimated based on multiple borings in each impoundment. Aeration Lagoon #1 has approximately 1,464 cubic yards of soft sediment and 229 cubic yards of hard pack sediment. Aeration Lagoon #2 was estimated to contain 3,404 cubic yards of soft sediment and 430 cubic yards of hard pack sediment.

1 Appendix B – historical EPA correspondence related to SWMU #1 closure status

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Section 3
Wastewater Treatment Unit Upgrades

Pursuant to the requirements of the OCD Discharge Permit (GW-032) approved on August 23, 2007, an engineering design and construction plan for replacement of the existing aeration lagoons with a tank-based system is being prepared by Western Refining. Closure of the existing aeration lagoons, which is the focus of this closure plan, is an integral part of the WWTU upgrades. The details of the planned upgrades are provided in a design and construction work plan for the new tank-based WWTU, which will be submitted separately to the OCD.

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Section 4
Proposed Closure Procedures

The proposed modified closure design includes removal and appropriate disposition of all hazardous wastes, hazardous constituents, decomposition products, and leachate above the natural clay liners of the aeration lagoons. "Modified closure" is defined as the process by which each aeration lagoon is removed from service, the existing water and sludge is removed and any impacts to the natural liner are removed while any potentially associated impacts to ground water will be addressed as part of the on-going corrective action process to address ground water in the area of the WWTU operations. The actual "modified closure" procedures are presented in more detail below.

Closure of the aeration lagoons will not begin until the new replacement tank-based ABT unit has been constructed and operated for sufficient time to ensure it is operating in accordance with the applicable regulatory and technical requirements. Flow of wastewater to the aeration lagoons will cease when the new tank-based treatment unit has demonstrated its ability to reliably meet the applicable treatment standards. Upon cessation of wastewater flow to the aeration lagoons, the wastewater remaining in the aeration lagoons will continue to be treated using the existing aeration units to reduce concentrations of organic constituents and minimize the volume of sludge in the aeration lagoons. After completion of the additional treatment, the wastewater will be pumped back to the WWTU to a location upstream of the API separator.

Following removal of the wastewater, the sludges present above the natural liner and any impacted underlying soils will be excavated from the impoundments. The excavated materials will then be sampled for hazardous characteristics in accordance with 40 CFR Part 261, Subpart C – Characteristics of Hazardous Waste. Samples of the sludge and soils will be collected for waste characterization at a minimum of one sample per each 100 cubic yards and in accordance with the requirements of the receiving waste disposal facility. If the sludges do not exhibit any hazardous characteristics, they will be removed by a vacuum truck for appropriate disposal. Additional wastes not amenable to vacuum removal may be removed using excavation equipment. It is anticipated that excavation will extend into the upper portion of the natural clay liner with a goal to remove all waste materials and impacted soil with concentrations of constituents exceeding the applicable industrial/occupational NMED Soil Screening Levels, which satisfies any "contained-in" concerns.

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If wastes/soils removed exhibit one or more hazardous characteristics, the wastes/soils will be placed into appropriate RCRA tanks/containers for disposal offsite as hazardous waste. All hazardous waste and waste residues will be removed and properly disposed by conducting the modified closure process and there will be no potential for any post-closure escape of such wastes, thus meeting the modified closure performance standards in §§265.111(a) and (b) as specified by §265.110(c)(2). Alternatively, materials that meet the exclusion at 40 CFR 261.4(a)(12)(i) for oil-bearing hazardous secondary materials may be recycled at a petroleum refinery.

The confirmation samples from the underlying environmental media (e.g., natural clay liner - native soils) will be collected and analyzed for volatile and semi-volatile organics and RCRA metals to determine if concentrations of constituents exceed the applicable industrial/ occupational NMED Soil Screening Levels. Samples will be collected from all faces of the excavations with an approximate spacing of 50 feet between sample grid locations.

Upon successful removal of all impacted materials, equipment used, which came into contact with the waste materials will be decontaminated with a high pressure steam cleaner and the rinse waters will be collected and placed in the WWTU upstream of the API separator. The dikes surrounding the aeration lagoon will be leveled and clean fill material imported, as necessary, to bring the land surface to final grade.

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Section 5
Closure Schedule & Cost Estimate

The schedule for closure of the aeration lagoons is as follows:

Description	Duration
Start of closure *[within 90 days after cessation of flow of wastewater to aeration lagoons]*	
Additional treatment via aeration	26 - 52 weeks[1]
Removal of treated wastewater	2 weeks
Drying of residual solids	8 weeks
Testing of residual solids	2 weeks
Removal of residual solids/impacted soils	6 weeks
Confirmation sampling	2 weeks
Removal of additional impacted soils, as necessary	2 weeks
Final confirmation sampling, as necessary	2 weeks
Certification	8 weeks
Total time required	58 - 84 weeks

The cost estimate for the ABT unit closure is presented below::

Description	Cost Estimate
Vigorous aeration with diesel pump	
Operator: 168 hours @ $30/hr	$5,040
Fuel for Pump: 8 gph x $3.00/gal x 168 hrs	$4,032
Testing of residual solids	
TCLP: 94 samples @ $500/sample	$47,000
Removal of sludge & soils	
Labor & Equipment	$165,000
Disposal:	$142,000[2]
Confirmation samples	$13,000
Final report and certification	$8,000
Total Closure Cost (estimate)	**$385,000**

1 – time based on effectiveness of biodegradation
2 – based on non-hazardous disposal costs

TABLE 1, ATTACHMENT 1B

NOTICE OF DISAPPROVAL
CLOSURE PLAN AERATION LAGOONS
NMED
(MAY 2009)

ENTERED

NEW MEXICO
ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau

2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Phone (505) 476-6000 Fax (505) 476-6030
www.nmenv.state.nm.us

BILL RICHARDSON
Governor

DIANE DENISH
Lieutenant Governor

RON CURRY
Secretary

JON GOLDSTEIN
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

May 6, 2009

Mr. Ed Riege
Environmental Superintendent
Western Refining, Southwest Inc., Gallup Refinery
Route 3, Box 7
Gallup, New Mexico 87301

RE: NOTICE OF DISAPROVAL
CLOSURE PLAN AERATION LAGOONS
WESTERN REFINING COMPANY, SOUTHWEST, INC., GALLUP REFINERY
EPA ID # NMD000333211
HWB-GRCC-09-003

Dear Mr. Riege:

The New Mexico Environment Department (NMED) has completed its review of the *Closure Plan Aeration Lagoons* (Plan), dated February, 2009, submitted on behalf of Western Refining Company, Southwest Inc., Gallup Refinery (Permittee). The Permittee has not provided sufficient information for NMED to complete a technical review. NMED hereby issues this Notice of Disapproval (NOD) and provides comments below.

Comment 1
The Permittee titled this document a closure plan; this term applies to permitted units or interim status units as referenced in NMED's fee regulations (20.4.2 NMAC). NMED does not consider Aeration Lagoon 1 and Aeration Lagoon 2 (AL-1 and AL-2) to be interim status units. NMED has determined this document to be a Corrective Measures Implementation Work Plan for a Solid Waste Management Unit (SWMU) listed in Appendix A of the Post-Closure Care Permit.

Comment 2
This Plan is missing significant information and pertinent details. The Permittee must include in the revised Plan not only cleanup activities at AL-1 and AL-2 but also investigation of the extent of contamination. NMED encourages the Permittee to refer to the template found in Section X.B (Investigation Work Plan) of Western Bloomfield's Order dated July 27, 2007 when revising this Plan. In addition, the Permittee must ensure that all sections (e.g., appendices) referenced in the text are actually included in the revisions to the Plan.

Comment 3
In Section 1 (Introduction), page 1, paragraph 5, the Permittee states "[m]onitoring data of the effluent from the air strippers, which discharges into the inlet aeration lagoon, and flows into Aeration Lagoon #2 has indicated that concentrations of benzene suspected to be above the toxicity characteristic (TC) regulatory threshold of 0.5 milligrams per liter (mg/l) have entered these impoundments."

Since January 2008, wastewater above 0.5 mg/l benzene has been entering AL-1 and AL-2; this is confirmed by analytical results from weekly sampling. The Permittee must revise this statement in the revision to the Plan to remove the term "suspected," clearly stating that benzene has been detected at concentrations that exceed the toxicity characteristic maximum concentration for benzene listed in 40 CFR 261.24.

Comment 4
In Section 1 (Introduction), page 2, paragraph 2, the Permittee states "[t]his Closure Plan is submitted pursuant to the requirements of Provision IV.B.9 of the Post Closure Care Order issued by the NMED on August 17, 2000 and the requirements of the OCD Discharge Permit issued August 23, 2007. The closure standard for Aeration Lagoon #1 and Aeration Lagoon #2 is based on 40 CFR § 265.111 (Closure Performance Standard) which requires that the owner or operator must close the facility in a manner that…"

Provision IV.B.9 is found in the Post Closure Care Permit (Permit) and not in an Order; AL-1 and AL-2 are not interim status units but solid waste management units (SWMUs) under going corrective action. Therefore, the Permittee must remediate AL-1 and AL-2 in accordance with Section IV.B (Corrective Action for SWMU's) of the Permit and 20.4.1.500 NMAC

(incorporating 40 CFR 264.101) of the Hazardous Waste Management Regulations. In the revision to the Plan, the Permittee must revise the above paragraph to reference the Permit and the correct regulations. See also Comment 1.

Comment 5

In Section 2.2 (Surface Impoundment Operations), page 4, paragraph 1, the Permittee states "[t]he refinery process wastewater generated (approximately 100 gallons per minute (gpm)) as measured in March 2006) at the Gallup Refinery is managed first by physical treatment in an API separator..."

The refinery's wastewater flow rates at times likely exceed 100 gallons per minute. Therefore, the Permittee must revise the Plan to provide an average flow rate of the process wastewater produced over the last year (2008) and include details pertaining to how the average was derived.

Comment 6

In Section 2.2 (Surface Impoundment Operations), page 4, paragraph 2, the Permittee states "[a]n investigation of the aeration lagoons was conducted in April 2008 to characterize the volume and nature of sediments in each basin. A copy of the report of the investigation prepared by Trihydro Corporation is included in Appendix A." (Appendix A was also referenced on page 5)

Appendix A was not included in the Plan, nor was it identified in the Table of Contents. The Permittee's revision to the Plan must include Trihydro's investigation report, and any other investigation information related to AL-1 and AL-2.

Comment 7

In Section 2.3 (Assessment Activities), page 5, paragraph 1, the Permittee states "[c]opies of EPA's letter dated January 7, 1994 and a subsequent facsimile dated March 15, 1996, which notes the changed monitoring frequency to five years, are included in Appendix B."

Appendix B was not included in the Plan nor was it identified in the Table of Contents. EPA's letter, fax, and the sampling that was conducted in 1990's (paragraph 1 and 2 of Section 2.3) will not affect the investigation or remediation activities for AL-1 and AL-2 because these units have received and treated hazardous waste characteristic for benzene and also likely generated F037 and F038 listed wastes since 1996. The Permittee must re-evaluate the information provided in Section 2.3 (Assessment Activities) and determine if the information is relevant to the cleanup activities for AL-1 and AL-2 and revise the Plan accordingly. The Permittee must also revise the text as it addresses Appendix B where appropriate.

Comment 8
In Section 2.3 (Assessment Activities), page 5, paragraph 4, the Permittee states that "[t]he volumes of sediment were estimated based on multiple borings in each impoundment. Aeration Lagoon #1 has approximately 1,464 cubic yards of soft sediment and 229 cubic yards of hard pack sediment. Aeration Lagoon #2 was estimated to contain 3,404 cubic yards of soft sediment and 430 cubic yards of hard pack sediment."

The Permittee must revise the Plan to include the dimensions of AL-1 and AL-2 as well as the estimated thicknesses of the soft and harder sediments. The Permittee must explain how the volumes of soft and hard sediments were estimated for each aeration lagoon.

Comment 9
In Section 4 (Proposed Closure Procedures), page 7, paragraph 3, the Permittee states "[f]ollowing removal of the wastewater, the sludges present above the natural liner and any impacted underlying soils will be excavated from the impoundments. The excavated materials will then be sampled for hazardous characteristics in accordance with 40 CFR Part 261, Subpart C – Characterization of Hazardous Waste. Samples of the sludge and soils will be collected for waste characterization at a minimum of one sample per each 100 cubic yards in accordance with the requirements of the receiving waste disposal facility. If the sludges do not exhibit any hazardous characteristics, they will be removed by a vacuum truck for appropriate disposal. Additional wastes not amenable to vacuum removal may be removed using excavation equipment."

The Permittee states that the sludges will be excavated and tested in accordance with 40 CFR 261 Subpart C, and that if the sludges do not exhibit any hazardous characteristics they will be removed by a vacuum truck. In the revised Plan, the Permittee must clarify if the sludges and soils will be tested for hazardous characteristics before or after excavation. The Permittee must explain how the excavation will be completed, include the order of operations, explain how the sludges and soil will be removed, and include the location where the soils and sludges will be stockpiled or otherwise temporarily stored.

Comment 10
In Section 4 (Proposed Closure Procedures), page 7, paragraph 3, the Permittee states "[i]t is anticipated that excavation will extend into the upper portion of the natural clay liner with a goal to remove all waste materials and impacted soil with concentrations of constituents exceeding the applicable industrial/occupational NMED Soil Screening Levels, which satisfies any "contained-in" concerns."

The Permittee should consider the following when choosing the cleanup standards for AL-1 and AL-2. If the Permittee chooses to clean up AL-1 and AL-2 using the industrial/occupational NMED Soil Screening Levels (SSLs), then AL-1 and AL-2 will be closed as corrective action complete with controls (CACWC) (i.e., no additional remedial activity is required but the unit requires continued operation and maintenance, monitoring actions for engineering controls, or institutional controls; the unit will stay on the Permit and annual fees will continue to be incurred) or AL-1 and AL-2 can be cleaned to meet the residential NMED SSLs and AL-1 and AL-2 will be closed as corrective action complete without controls (CACWOC) (no additional remedial activity is required at the unit and the Permittee can petition for a corrective action complete determination). In light of this, the Permittee may wish to revise the target cleanup levels referenced in the Plan. (The definitions for CACWC and CACWOC can be found at NMAC 20.4.2.7 (Definitions) J and K)

If NMED determines the Permittee is unable to achieve residential cleanup standards, the Permittee will be directed to submit a Corrective Measures Study to evaluate remedial alternatives. NMED will select a remedy based on the information provided in the CMS. The remedy selection is subject to public participation in accordance with 20.4.1.901 NMAC. Upon selection of a remedy, NMED will establish a due date for submittal of a Corrective Measures Implementation Work Plan that shall include the details for implementation of the selected remedy and a schedule for completion of such implementation.

Comment 11

In Section 4 (Proposed Closure Procedures), page 7, paragraph 3, the Permittee states "[i]t is anticipated that excavation will extend into the upper portion of the natural clay liner with a goal to remove all waste materials and impacted soil with concentrations of constituents exceeding the applicable industrial/occupational NMED Soil Screening Levels, which satisfies any "contained-in" concerns."

Cleaning up to the industrial/occupational NMED SSLs does not satisfy "contained-in concerns." If the Permittee seeks a "no longer contained in" determination for a listed hazardous waste, it must request it in writing and obtain approval by NMED. The Permittee must revise the last sentence of this paragraph to remove reference to "contained-in concerns" because this term and reference to the NM SSLs are used incorrectly. The Permittee must also address how it will determine that all waste materials and contaminated soils have been removed. The Plan must be revised accordingly.

Comment 12

In Section 4 (Proposed Closure Procedures), page 7, paragraph 3, the Permittee states "[t]he excavated materials will be sampled for hazardous characteristics in accordance with 40 CFR 261, Subpart C – Characteristics of Hazardous Waste. Samples of the sludge and soil will be

collected for waste characterization at a minimum of one sample per each 100 cubic yards and in accordance with the disposal facility receiving the waste."
The Permittee must revise this Section of the Plan to include the analyses for diesel range organics (DRO) extended, gasoline range organics (GRO), volatile organic compounds (VOCs), semi-volatile organics (SVOCs), iron, manganese, and the Skinner List for organics and inorganics; see Attachment 1 Skinner List.

Comment 13
In Section 4 (Proposed Closure Procedures), page 8, paragraph 1, the Permittee states "[a]ll hazardous waste and waste residues will be removed and properly disposed by conducting the modified closure process and there will be no potential for any post-closure escape of such wastes, thus meeting the modified closure performance standards in §§265.111(a) and (b) as specified by §265.110(c)(2). Alternatively, materials that meet the exclusion at 40 CFR 261.4(a)(12)(i) for oil-bearing hazardous secondary materials may be recycled at a petroleum refinery."

AL-1 and AL-2 must be closed in accordance with 20.4.1.500 NMAC (incorporating 40 CFR 264.101); see Comment 4. If the Permittee is considering recycling the sludges removed from AL-1 and AL-2 in accordance with 40 CFR 261.4(a)(12)(i), the Permittee must explain how the sludge will be recycled and describe in detail how the process will be completed. All details of the recycling process must be included. NMED views the sludges removed from AL-1 and AL-2 to be remediation waste. The Permittee must revise the Plan accordingly.

Comment 14
In Section 4 (Proposed Closure Procedures), page 8, paragraph 2, the Permittee states "[t]he confirmation samples from the underlying environmental media (e.g., natural clay liner-native soils) will be collected and analyzed for volatile and semi-volatile organics and RCRA metals to determine if concentrations of constituents exceed the applicable industrial/occupational NMED Soil Screening Levels. Samples will be collected from all faces of the excavations with an approximate spacing of 50 feet between sample grid locations." The Permittee must revise the Plan to incorporate the items below.

a. The Permittee may choose to revise the above paragraph to apply the residential NMED SSLs; see Comment 10.

b. In addition to the analytical methods listed above, the Permittee must analyze the confirmation samples for DRO extended, GRO, the skinner list for inorganics and organics, iron, and manganese.

c. The results of the confirmation samples must also be compared to NMED's Total

Petroleum Hydrocarbon Screening Guidelines (October 2006) (this applies to all analytical data collected).

d. The Permittee must collect the samples from the base and sidewalls of the excavations of AL-1 and AL-2 every 20 feet instead of every 50 feet.

Comment 15

In Section 4 (Proposed Closure Procedures), page 8, paragraph 3, the Permittee states "[t]he dikes surrounding the aeration lagoon will be leveled and clean fill material imported, as necessary, to bring the land surface to final grade."

Because the dikes will be used to fill in the aeration lagoons, the Permittee must revise the Plan to include the collection of dike samples. In addition, the surface soil samples must be collected at 25 foot intervals from the center of the dike. At each sample location, a sample must be collected from the surface and at the one to two foot interval. All samples collected must be analyzed for VOCs, SVOCs, DRO extended, GRO, iron, manganese and the Skinner List (organics and inorganics). The Permittee must include a figure showing the proposed dike sample locations. If the dike material is to be used as backfill in AL-1 and AL-2, any residual contaminant concentrations must meet NMED's residential SSLs. The Permittee must obtain NMED and OCD permission before backfilling AL-1 and AL-2 with the dike material.

Comment 16

As part of the wastewater treatment system upgrade, the Permittee will be removing from service benzene strippers one and two at the aeration lagoons. Since the benzene strippers discharged to AL-1 as part of the aeration lagoon closure process, the benzene strippers must be dismantled and this area investigated and remediated in accordance with 20.4.1.500 NMAC (incorporating 40 CFR 264.101). The Permittee must revise the Plan to include the process to remove the benzene strippers and proposed sampling and remediation of this area as necessary.

Comment 17

The Permittee must revise the Plan to include and address the items listed below:

a. Provide a scope of services.

b. Discuss site conditions.

c. Discuss the history of operation of AL-1 and AL-2.

d. Discuss if AL-1 and AL-2 have ever been dredged in the past and, if so, the volumes of sediment removed.

e. Include a site plan and figures that identify the location of AL-1 and AL-2 and where the proposed samples will be collected.

f. Include the sampling methods and procedures (e.g., describe how samples will be collected and logged, indicate if field screening will be conducted). Indicate if any groundwater or process water sampling will be conducted and, if so, include all details.

g. Where applicable, address laboratory quality assurance and quality control procedures laboratory deliverables, and indicate if blanks, field duplicates, and other similar samples, will be collected.

h. Describe excavation activities to include how the excavation will be completed and what equipment will be used. Explain how the integrity of the bank separating Evaporation Pond 1 (EP-1) and AL-1 and AL-2 will be maintained to prevent bank failure. Explain how the excavated material(s) will be managed.

i. The Permittee must ensure that the bank separating EP-1, AL-1, and AL-2 do not contain contaminants exceeding the residential NM SSLs and explain how this will be determined.

j. Indicate if GWM-1 and GWM-2 are anticipated to be destroyed during the excavations or left undamaged. If they will be destroyed, explain where the proposed replacement wells will be installed. All details must be included in the revised Plan.

k. Explain how the limits of excavation will be determined.

l. Address Investigation Derived Waste Management.

The Permittee must address all comments contained in this NOD and submit a revised Plan (see Comment 1) to NMED on or before July 31, 2009. The revised Plan must be submitted with a response letter that details where all revisions have been made, cross-referencing NMED's numbered comments. In addition, an electronic version of the revised Plan must be submitted that identifies where all changes have been made in red-line strikeout format. If you have questions regarding this letter please contact Hope Monzeglio of my staff at 505-476-6045.

Sincerely,

James P. Bearzi
Chief
Hazardous Waste Bureau

cc: J. Kieling, NMED HWB
D. Cobrain NMED HWB
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A. Allen, Western El Paso
File: Reading File and GRCC 2009 File
HWB-GRCC-09-003

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Attachment 1

Exhibit 3

CONSTITUENTS OF CONCERN FOR WASTES FROM PETROLEUM REFINING

Inorganics

Antimony	Lead
Arsenic	Mercury
Barium	Nickel
Beryllium	Selenium
Cadmium	Silver
Chromium	Vanadium
Cyanide	Zinc

Organics

Acenaphthene
Benzene
Benzo(a)anthracene
Benzo(b)fluoranthene
Benzo(a)pyrene
Bis(2-ethylhexyl)phthalate
Butyl benzyl phthalate
Carbon disulfide
Chlorobenzene
Chloroform
Chrysene
Cresols
Dibenz(a,h)anthracene
Di-n-butyl phthalate
1,2-Dichlorobenzene
1,4-Dichlorobenzene
1,2-Dichloroethane
1,1-Dichloroethylene
7,12-Dimethylbenz(a)anthracene
2,4-Dimethylphenol
2,4-Dinitrotoluene
Di-n-octyl phthalate
1,4-Dioxane
Ethylbenzene
Ethylene dibromide
Fluoranthene
Fluorene
Indeno(1,2,3-cd)pyrene
Methyl ethyl ketone
Naphthalene
Nitrobenzene
Phenol
Pyrene
Pyridine
Styrene
Tetrachloroethylene
Toluene
1,1,1-Trichloroethane
Trichloroethylene
Xylenes (total)

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TABLE 2

MPC RESPONSE TO NMED COMMENTS FOR THE "APPROVAL WITH MODIFICATIONS SWMU-1 TEST PIT INSTALLATION LETTER REPORT" (JANUARY 3, 2022)

TABLE 2. NEW MEXICO ENVIRONMENT DEPARTMENT (NMED) TO MARATHON PETROLEUM COMPANY (MPC) COMMENT LETTER "APPROVAL WITH MODIFICATIONS SWMU-1 TEST PIT INSTALLATION LETTER REPORT" (JANUARY 3, 2022)

Comment 1:	Response 1:
In the Test Pit Yield Testing Section, page 2 of 4, paragraph 2, the Permittee states, "[o]nly TP-2, TP-3, and TP-4 had sufficient water for testing." According to Figure 1 (SWMU-1 Test Pit Locations), test pit TP-1 was advanced approximately 70 feet west of well OAPIS-1. During the test, groundwater was not detected in test pit TP-1 even though the screened interval of test pit TP-1 was completed between 5 to 15 feet below ground surface (bgs) as reported in Attachment A (Boring Logs). The screened interval of test pit TP-1 is recorded as 5 - 15 feet bgs according to Attachment A (boring Logs). Based on the field observations, the depth of the water table at test pit TP-1 appears to dip more than 5 vertical feet across approximately 70 lateral feet across the ponds. Furthermore, previous measurements indicate that the depth to groundwater (DTW) in well OAPIS-1 is recorded as approximately 10 feet bgs. Since groundwater was not detected in test pit TP-1 during the test, the depth of the water table at test pit TP-1 is anticipated to be more than 15 feet bgs (below the bottom of the screened interval). In addition, previous groundwater depth measurement data indicate that the DTW in well GWM-1 located on the northwest corner of pond AL-2 is recorded as approximately 20 feet bgs. This data also suggests that the groundwater gradient across the ponds is very steep. Comments 5 and 7 of the NMED's December 14, 2021 Disapproval SWMU-1 Closure Plan (Disapproval) states, "the proposed excavation depth must be extended to depths of the historical water table [and] the groundwater elevation at well GWM-1 must be referenced as a minimal depth of the excavation at the western boundary of AL-2 and EP-1." Although revisions to the Report are not required, the Permittee must acknowledge that the volume of excavated soils may be larger than anticipated because of the observed depths of the water table across the ponds. Address this comment in the revised Closure Plan to be submitted no later than February 11, 2022. No response required.	MPC does not agree with NMED's assertion that the proposed excavation depth must be extended to depths of the historic groundwater table. The focus of the CMIWP is to address the waste that is contained with SWMU-1. This scope of work includes a robust confirmation sampling program designed to ensure that the waste contained within SWMU-1 has been excavated and properly disposed of. Additionally, the sampling program will confirm that all associated waste impacts are removed from the underlying native soil to meet industrial/commercial and construction worker cleanup standards. It is beyond the scope of this activity to include removal of all native soil below the existing waste impoundment. The removal of waste from SWMU-1 is not intended to address groundwater impacts at the site.

TABLE 2. NEW MEXICO ENVIRONMENT DEPARTMENT (NMED) TO MARATHON PETROLEUM COMPANY (MPC) COMMENT LETTER "APPROVAL WITH MODIFICATIONS SWMU-1 TEST PIT INSTALLATION LETTER REPORT" (JANUARY 3, 2022)

Comment 2:	**Response 2:**
In the Test Pit Yield Testing Section, page 2 of 4, paragraph 3, the Permittee states, "[o]bservation wells for TP-3 consisted of NAPIS-2 and NAPIS-3, located approximately 22 ft and 45 ft from the TP-3. No influence was observed during the field test in these wells." The screened interval of test pit TP-3 is recorded as 5 to 15 feet bgs as reported in Attachment A (Boring Logs). The depth of the interceptor trench in the Permittee's September 30, 2021 Closure Plan is proposed to be 5 feet bgs which will not be deep enough to construct an effective interceptor trench. Comment 18 of the NMED's December 14, 2021 Disapproval states, "[t]he depth of the interceptor trench must be lower than the depth of the excavation or the historic water table at a minimum." Since the test pits were installed to the depths comparable to the surrounding water table depths (greater than 10 feet bgs), the data collected from the test will be useful to design the interceptor trench. However, since no hydrostatic influence was observed in the upgradient neighboring wells, the proposed depth of the interceptor trench must be greater than 15 feet bgs in order to ensure that there is the ability to sufficiently depress the water table across the ponds. NMED recommends that the depth of the interceptor trench be comparable to the excavation depth on the western perimeter of the ponds (e.g., 20 feet bgs). Address this comment in the revised Closure Plan. No response required.	This comment is addressed in Section 5.5 (pages 31 - 32 of 38) in the revised CMIWP.
Comment 3:	**Response 3:**
In the Analysis of Water Levels at SWMU-1 Section, page 3 of 4, paragraph 1, the Permittee states, "[t]he catchment area of the former API most likely contributed storm water to AL-1 in the past (the drain line was CMIWPped in May 2021)." The aerial photographs depict the persistent presence of standing water in the ponds. The standing water did not recede after the drainage pipe was CMIWPped and approximately 63,000 gallons of water was subsequently removed from pond AL-2. After the water was removed, water still remained in the pond. It is probable that groundwater seepage is contributing to the persistent presence of standing water in the ponds. No revision to the Report is necessary.	The continued presence of water within AL-1 and AL-2 is due to ongoing precipitation at the site and the low rate of evaporation associated with pond water with high total dissolved solids. Based on approximately 9 inches of precipitation in 2021 and the area of the ponds, the 63,000 gallons pumped from AL-2 represents approximately one-half of the precipitated water volume. In addition, during the test pit investigation, there was little seepage observed within the test pits. Moreover, the historical maximum elevation of the potentiometric surface at the site lies below the water surface in the ponds. This evidence strongly suggests that the waste is hydrologically disconnected from groundwater at the site.

TABLE 2. NEW MEXICO ENVIRONMENT DEPARTMENT (NMED) TO MARATHON PETROLEUM COMPANY (MPC) COMMENT LETTER "APPROVAL WITH MODIFICATIONS SWMU-1 TEST PIT INSTALLATION LETTER REPORT" (JANUARY 3, 2022)

Comment 4:	Response 4:
In the Analysis of Water Levels at SWMU-1 Section, page 3 of 4, bullet 3, and Conclusion, page 3 of 4, number 3, the Permittee states, "[a]t a minimum, the seepage rate is likely low enough to control with standard excavation practices, such as a shallow diversion trench installed at the excavation bottom [and a] likely source of the accumulated water in ponds AL-1 and AL-2 is surface water and precipitation." Figure 2 (SWMU-1 and NAPIS Cross Section) depicts that groundwater level at test pit TP-1 is approximately 10 feet bgs and also depicts groundwater intersecting the screened interval of test pit TP-1; however, Figure 2 is not accurate because groundwater was not present in the screened interval of test pit TP-1 during the test. The water levels and surface water observed in the ponds depicted in the cross-sections of Figure 2 do not correspond well with the field observations (see Comment 1) and conditions (e.g., construction depth of the pond is approximately 14 feet, not less than 5 feet as depicted in Figure 2). Furthermore, the seepage rate may also be greater than anticipated and the depth of the interceptor trench will need to be extended (See Comment 2). Although no revision is required, the comment must be addressed in the revised Closure Plan.	This comment is addressed in Section 5.5 (pages 31 - 32 of 38) in the revised CMIWP.

ATTACHMENT A

SWMU-1 CORRECTIVE MEASURES IMPLEMENTATION WORK PLAN (FORMERLY THE SWMU-1 CLOSURE PLAN)

WESTERN REFINING SOUTHWEST LLC, D/B/A

MARATHON GALLUP REFINERY

SWMU-1 CORRECTIVE MEASURES IMPLEMENTATION WORK PLAN

MARCH 15, 2023

Executive Summary

Trihydro Corporation has prepared this Corrective Measures Implementation Work Plan (CMIWP), formerly the SWMU-1 Closure Plan) to address environmental impacts associated with Solid Waste Management Unit (SWMU)-1 at the Marathon Gallup Refinery (Refinery), owned and operated by Western Refining Southwest LLC. SWMU-1 consists of the former aeration lagoons (ALs) (AL-1 and AL-2) and an evaporation pond (EP) (EP-1). AL-1 and AL-2 were formerly operated as a biological treatment unit for the treatment of Refinery wastewater. This Plan describes the activities necessary to complete corrective action associated with SWMU-1 at the Refinery in 2023.

Corrective action of SWMU-1 involves submittal of this CMIWP to the New Mexico Environment Department (NMED) Hazardous Waste Bureau, CMIWP approval by NMED, and implementation of the approved CMIWP. Implementation will involve excavation of SWMU-1 accumulated sludge (waste), waste stabilization for transportation if needed, waste transportation, and disposal at a permitted Treatment, Storage, and Disposal Facility (TSDF). AL-1 and AL-2 contain F-listed (F037/F038) hazardous waste due to malfunctioning aerators as determined by NMED (NMED 2017). Based on sampling conducted EP-1 sediments do not likely contain a characteristic hazardous waste. However, NMED has documented that releases of hazardous waste into EP-1 may have occurred (NMED 2022a). Therefore, Marathon Petroleum Company (MPC) has requested a No Longer Contained-In (NLCI) determination (MPC 2022a) to manage the sludges and soil removed from SWMU-1 as non-hazardous or as a special waste. NMED issued an Approval with Modifications for the NLCI request (NMED 2022b) and responses to comments were submitted by Marathon Petroleum Corporation (MPC 2022b).

This Plan is submitted pursuant to the requirements of the Refinery's Resource Conservation and Recovery Act Post-Closure Permit issued in October 2013 and modified in September 2017. SWMU-1 Corrective Measures will meet the Refinery's RCRA Post-Closure Permit (Section IV.H.7) (NMED 2022c). The Refinery will utilize the NMED Residential soil screening levels (SSLs) and United States Environmental Protection Agency Regional Screening Levels to guide the removal of sludge. Achieving "clean closure" is not anticipated; therefore, removal of impacted material to reach industrial/commercial SSLs (1 foot [ft] below ground surface [bgs]) and construction worker SSLs (1 ft bgs to 10 ft bgs) with institutional controls is the likely outcome.

SWMU-1 corrective action will include excavation and removal of the accumulated sludge, followed by confirmation sampling and laboratory analysis, submission of the laboratory analysis to the NMED, and transportation and disposal of the waste to an approved disposal facility. Following sludge removal, an interceptor trench may be installed within AL-1 to reduce the potential of impacted groundwater contacting clean backfill in the area. The proposed groundwater interceptor trench will be installed if deemed necessary dependent on site conditions and if the excavation is deep enough to intersect groundwater. Backfilling of AL-1 and AL-2 will generally match the existing grade using clean backfill, following NMED approval of the extents of excavation.

Excavation and backfill of SWMU-1 is anticipated to be completed in 2023. To meet these milestones, the contractor evaluation and selection process will occur in the second quarter of 2023. This process will

determine sludge management methodology (excavation, handling, and loading, etc.). Post-excavation sampling of individual waste stockpiles (one 5-point composite sample per 250 cubic yards stockpile will determine the ultimate disposition of the waste (i.e., hazardous / nonhazardous) as required in the NLCI. In general, waste excavation will involve establishment of work areas, including an exclusion zone and decontamination zone, as necessary. Berms will be established around the waste handling areas to contain any storm water run-on/runoff. Any accumulated storm water and water from waste dewatering will be removed by vacuum truck and transported to the Refinery's permitted wastewater treatment system.

Final grading of SWMU-1 will provide a relatively flat surface for potential future Refinery use while maintaining positive drainage to reduce ponding.

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Acronyms

ABTU	aggressive biological treatment unit
amsl	above mean sea level
AL	aeration lagoon
bgs	below ground surface
CAFO	Consent Agreement and Final Order
CMIWP	Corrective Action Plan
CMIWP	Corrective Measures Investigation Work Plan
CFR	Code of Federal Regulations
decon	decontamination
DMP	Disposal Management Plan
DRO	diesel range organics
EP	evaporation pond
FID	flame ionization detector
ft	foot or feet
ft^2	square feet
GPS	global positioning system
GRO	gasoline range organics
HASP	Health and Safety Plan
HAZWOPER	hazardous waste operations
I-40	Interstate 40
LCS	Laboratory Control Spike
MPC	Marathon Petroleum Corporation

Acronyms (continued)

MRO	motor oil range organics
NLCI	no longer contained in
NM	New Mexico
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NOD	Notice of Disapproval
OM&M	Operation, Maintenance, and Monitoring
PID	photoionization detector
PM	Project Manager
QA/QC	quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
Refinery	Western Refining Southwest LLC, D/B/A Marathon Gallup Refinery
SSL	soil screening levels
SVOC	semi-volatile organic compound
SWB	Solid Waste Bureau
SWMU	solid waste management unit
TCLP	toxicity characteristic leaching procedure
TP	test pit
TPH	total petroleum hydrocarbons
Trihydro	Trihydro Corporation
TSDF	Treatment, Storage, and Disposal Facility
USEPA	United States Environmental Protection Agency

Acronyms (continued)

UAS	unmanned aerial survey
VOC	volatile organic compound
Western	Western Refining
WWTP	Wastewater Treatment Plant
yds^3	cubic yards

1.0 Introduction

Trihydro Corporation (Trihydro) has prepared this Corrective Action Plan (CMIWP) of Solid Waste Management Unit (SWMU) 1 for Western Refining Southwest LLC, D/B/A Marathon Gallup Refinery (Refinery). The Refinery is located approximately 17 miles east of Gallup, McKinley County, New Mexico (NM) along the north side of Interstate 40 (I-40) (Figure 1-1). The physical address is I-40, Exit #39, Jamestown, NM 87347. The Refinery property covers approximately 810 acres.

SWMU-1 consists of two former aeration lagoons (ALs) (AL-1 and AL-2) and an evaporation pond (EP) (EP-1) (Figure 1-2). AL-1 and AL-2 were formerly operated as an aggressive biological treatment unit (ABTU) for the treatment of Refinery wastewater. Following ABTU treatment, water flowed by gravity to EP-1 for initial evaporation, followed by gravity flow to several downstream EPs, which are within SWMU-2 and are not a part of SWMU-1. SWMU-1 was constructed in 1987 and operated until 2013, when it was replaced by the current system, including a new aeration basin.

The remediation at SWMU-1 involves submittal of this CMIWP to the New Mexico Environment Department (NMED) Hazardous Waste Bureau, CMIWP approval, and implementation of the approved CMIWP. Implementation will involve excavation of SWMU-1 accumulated sludge (waste) and associated impacted soil, waste stabilization for transportation if needed, waste transportation, and disposal at a permitted Treatment, Storage, and Disposal Facility (TSDF).

This CMIWP is submitted pursuant to the requirements of the Refinery's Resource Conservation and Recovery Act (RCRA) Post-Closure Permit (NMED 2022c). The Refinery will utilize the NMED soil screening levels (SSLs) (i.e., residential, industrial/commercial, and construction worker) and United States Environmental Protection Agency (USEPA) Regional Screening Levels to guide the removal of sludge. Achieving "clean closure" is not anticipated; therefore, removal of impacted material to reach industrial/commercial cleanup standards (1 foot [ft] below ground surface [bgs]) and construction worker standards (1 ft bgs to 10 ft bgs) with institutional controls as the likely outcome.

Following sludge removal, an interceptor trench may be installed within AL-1 and EP-1 to reduce the potential of impacted groundwater contacting clean backfill in the area. The proposed groundwater interceptor trench will be installed if deemed necessary dependent on site conditions and if the excavation is deep enough to intersect groundwater. The ALs will be backfilled with clean borrow soil and graded to promote positive drainage and to match the surrounding existing topography.

Based on the use of AL-1/AL-2 as an ABTU and that there were documented aerator failures, AL-1 and AL-2 sediments are considered to contain F-listed (F037/F038) hazardous waste as determined by NMED in 2017 (NMED 2017). SWMU-1 was sampled as part of an investigation conducted in January 2020 (MPC 2021a) to characterize SWMU-1 waste as a first step in the corrective action plan preparation. Based on sampling conducted EP-1 sediments do not likely contain a characteristic hazardous waste. However, NMED has documented that releases of hazardous waste into EP-1 may have occurred (NMED 2022a). Therefore, Marathon Petroleum Company (MPC) has requested a No Longer Contained-In (NLCI) determination (MPC

2022a) to manage the sludges and soil removed from SWMU-1 as non-hazardous or as a special waste. NMED issued an Approval with Modifications for the request (NMED 2022b) and responses to comments were submitted by MPC (MPC 2022b). As a result, SWMU-1 waste will be sampled post-excavation and will be managed accordingly (i.e., hazardous or nonhazardous per comparison of post-excavation stockpile analytical data against criteria provided in Title 40, Code of Federal Regulations Part 261 – Identification and Listing of Hazardous Waste) .

This CMIWP describes the activities necessary to address SWMU-1 at the Refinery. This Plan provides a history of SWMU-1, the standards that will be met for the corrective measures, the plan for field implementation, and the sampling and analysis plan to verify corrective action.

1.1 Corrective Measures Performance Standards

This Plan is submitted pursuant to the corrective action requirements of the Refinery's RCRA Post-Closure Permit (Section IV.H.7) (NMED 2022c). As mentioned in the NLCI request, NMED approved Western's preferred conceptual remedy of a dig-and-haul solution for AL-1, AL-2, and EP-1 (SWMU-1) in March 2021. Per Section IV.H.6.d.i. of the Permit, all remedies must meet the following threshold criteria:

(1) Be protective of human health and the environment: implementation of the remedy results in in conditions at the former SWMU that are not and do not have the potential to be immediately dangerous, acutely hazardous, or chronically hazardous to human or ecological receptors and all remedial standards have been met (see criterion #2 below).

(2) Attain media cleanup standards: the SWMU-1 excavation will be protective of human health and the environment consistent with current land use of the property, by removing impacted material to reach industrial/commercial cleanup standards (1 foot [ft] below ground surface [bgs]) and construction worker standards (1 ft bgs to 10 ft bgs), as well as the addition of institutional controls as part of the corrective action.

(3) Control the source or sources of releases so as to reduce or eliminate, to the extent practicable, further releases of contaminants that may pose a threat to human health and the environment: as SWMU-1 was no longer used prior to idling of the facility, no further environmental degradation is anticipated in the SWMU. Furthermore, excavation remedies remove contaminants and therefore eliminate or reduce sources of direct exposures to humans and environmental receptors.

(4) Comply with applicable standards for management of wastes: this criterion will be met through implementation of the post-excavation NLCI verification sampling as well as the special waste DMP for solid waste management and disposal.

In collaboration with NMED, the Refinery anticipates CMIWP approval in early 2023, with excavation of SWMU-1 efforts to follow shortly after. An excavation completion report is anticipated to be prepared in 2024 for SWMU-1 work. Once the corrective action has been approved, the Refinery will submit a Class 3 Permit Modification and Long Term Monitoring and Maintenance Plan as described in Condition IV.G of the RCRA

permit. The Class 3 Permit Modification will change the status of SWMU-1 from "corrective action required" to "corrective action complete." The timeline of the corrective measures for SWMU-1, is provided in Appendix A.

1.2 Facility Information

Information regarding the Refinery ownership is below:

Owner/Operator:	Western Refining Southwest LLC 92 Giant Crossing Road Gallup, NM 87301	(Postal Address)
	Western Refining Southwest LLC I-40, Exit 39 Jamestown, NM 87347	(Physical Address)

The Refinery is situated on 810 acres that are largely located within the lower one quarter of Section 28 and throughout Section 33 of Township 15 North, Range 15 West of the New Mexico Principal Meridian. A small component of the property lies within northeastern one quarter of Section 4 of Township 14 North, Range 15 West.

The Refinery was built in the 1950s within a rural and sparsely populated section of McKinley County in Jamestown, NM, 17 miles east of Gallup, NM. The nearest population centers are the Pilot Flying J Travel Center refueling plaza, the Interstate 40 highway corridor, and a small cluster of residential homes located on the south side of I-40 approximately 2 miles southwest of the Refinery (Jamestown).

Currently the Refinery is indefinitely idled. When operating, the Refinery is a petroleum refinery that processes crude oil transported by pipeline or tanker truck from the Four Corners region. The Refinery can receive natural gas feed stock from the Western Refining Southwest LLC – Wingate Plant. When operating, process operations at the Refinery include crude distillation, reformer, fluidized catalytic cracker, alkylation, sulfur recovery, merox treater, and hydrotreater. The Refinery is capable of producing gasoline, diesel fuels, jet fuels, kerosene, propane, butane, and residual fuel.

The Refinery has been indefinitely idled since August 2020. The current operations of the Refinery are limited to the Wastewater Treatment Plant (WWTP). Product is not currently stored at the Refinery and all processes have been temporarily shut down as part of the Refinery idling. All process tanks are empty, have been cleaned and inspected, and no longer store or contain material. The Refinery maintains compliance under the RCRA Post-Closure Permit.

1.3 RCRA Compliance

This CMIWP is covered by the Refinery's RCRA Post-Closure Permit (Modified September 2017) Part IV.H.7.b. The referenced portion of the permit details the elements required for a Corrective Measures Implementation

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Plan. The elements are listed below followed by the corresponding section (**bold**) within this CMIWP or noted deviations:

1. A description of the selected final remedy is provided in **Section 5.0**.
2. A description of the cleanup goals and remediation objectives are provided in **Section 5.3 and 5.4**, respectively.
3. An identification and description of the qualifications of all persons, consultants, and contractors that will be implementing the remedy is required. Specific roles and responsibilities are outlined in **Section 1.4.**
4. Preliminary engineering design drawings and systems specifications for all elements of the remedy are required and are discussed in **Section 5.0**. Figures illustrating existing features are included along with a Preliminary Plan Set that details planned site work.
5. The construction plan is outlined in **Section 5.2**.
6. An operation, maintenance, and monitoring (OM&M) plan is summarized in **Section 5.8**.
7. The results of any remedy pilot test (e.g., waste stabilization, etc.) are included in **Section 4.3** which summarizes the findings of the SWMU-1 Test Pits excavation.
8. A plan for monitoring the performance of the remedy, including sampling and laboratory analysis of all affected media is provided in **Section 5.4**.
9. A waste management plan is provided in **Section 5.3**.
10. A proposed schedule for submission to the NMED of periodic progress reports is presented in **Section 5.7**.
11. A proposed schedule for implementation of the remedy is presented in **Appendix A**.

1.4 Program Management

Responsibilities of project personnel and positions that are important to the implementation and performance of the SWMU-1 CMIWP are described below.

- NMED Representative – the NMED Representative will have the responsibility to review this CMIWP and subsequent reports submitted by the Refinery.
- Marathon Representative – Marathon Corporation environmental staff (Kateri Luka, Senior HES Professional) will serve as the Marathon Project Representative for the SWMU-1 CMIWP.
- Consulting Project Team – Various consultants will be retained by the Refinery to complete the corrective action at SWMU-1. Trihydro presently serves as the Refinery's consultant for implementation of field investigations and data collection efforts. Trihydro is responsible for budget control, contractor

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oversight and coordination, completion of field activities, and additional assessment activities as requested by the Refinery and/or NMED.

- Consultant Project Manager (PM) – the consulting PM has overall responsibility for ensuring that all field activities and reports meet the objectives outlined in this CMIWP and the RCRA Post-Closure Care Permit. The consulting PM will report directly to the Refinery and maintain communication with the remainder of the project team. The consulting PM will work in conjunction with the Refinery to complete all necessary tasks associated with this CMIWP.

- Technical Field Staff – The technical field staff implement the CMIWP activities and prepare various reports and supporting materials. Technical field staff are experienced professionals who possess the degree of specialization and technical competence required to perform the required work effectively and efficiently.

- Contractors- Contractors will be selected for field activities and construction associated with this CMIWP. Only contractors with appropriate certifications (i.e., hazardous waste operations [HAZWOPER] and Department of Transportation) will be included on the bidders list. The contractors will work in conjunction with the technical field staff and consulting PM. The contractor will be selected based on experience, certifications, and specialization to perform the required work effectively and efficiently.

2.0 Site Conditions

The Refinery is located within a rural and sparsely populated section of McKinley County. It is situated in the high desert plain on the western flank of the Continental Divide approximately 17 miles east of Gallup, NM. The surrounding land is comprised primarily of public and private lands used for livestock grazing.

2.1 Surface Conditions

Local site topographic features include high ground in the southeast gradually decreasing to a lowland fluvial plain to the northwest. Elevations on the Refinery property range from 7,040 ft above mean sea level (amsl) to 6,860 ft amsl. The area near the SWMU-1 ponds is at an approximate elevation of 6,910 ft amsl (DiSorbo 2018).

Surface water features of SWMU-1 include only EP-1, AL-1, and AL-2. Additional surface water features in the area are not a part of SWMU-1. The three features that comprise SWMU-1 are blinded from the remaining surface features at the Refinery.

2.2 Subsurface Conditions

The shallow subsurface soil (alluvium) is comprised of clay and silt with some inter-bedded sand layers. Beneath the alluvium is the Petrified Forest Member of the Chinle Group, which primarily consists of interbedded mudstone, siltstone, and sandstone. The Alluvium/Chinle interface at SWMU-1 ranges from 15 ft bgs to 32 ft bgs. Figure 2-1 shows the potentiometric surface in the area based on groundwater sampling conducted in November 2020. As shown on this figure, the prevailing groundwater flow direction is westward across SWMU-1, which is consistent with prior potentiometric surface maps in this area. Cross-sections through the SWMU-1 area are depicted on Figures 2-2 and 2-3 along with historical ranges (minimum, maximum, and average) of depth to groundwater. These cross-sections were prepared relative to the local ground surface as determined during the aerial survey conducted in November 2018. As shown in these figures, groundwater levels in wells and test pits surrounding SWMU-1 are generally below the anticipated level of the bottom of the sludge in AL-1 and AL-2. The sludge depth in AL-1 and AL-2 is estimated to be 5 to 6 ft, based on SWMU-1 sludge sampling.

Construction as-built drawings of SWMU-1 are not available, but a geotechnical design report entitled "Geotechnical Investigation Three Cell Sludge Pond," dated July 22, 1986, indicates that the plans for the lagoons included clayey soils (NMED 2017). The clay bottom was evident during the recent SWMU-1 investigation (MPC 2021a) as a distinct color change and abrupt decrease of waste concentrations measured via laboratory analyses as shown on Table 1.

The topographical data in Figure 2-2 are based on an unmanned aerial survey (UAS) flight conducted in November 2018 using Trihydro's UAS drone. The topographic elevation surface was generated from aerial imagery, with vertical accuracies of 0.1 to 0.2 ft in open areas. All groundwater levels were referenced to ground surface of the UAS survey, thereby providing a basis for comparison of groundwater elevations with respect to the surface water elevations in AL-1 and AL-2 observed in November 2018 during the UAS survey. The photograph on Figure 2-2 was taken at the same time as the ground survey and shows the extent of water

in the two lagoons. The water levels in the area's monitoring wells, in relation to the higher water levels in AL-1 and AL-2, suggest that seepage from groundwater into AL-1 and AL-2 is unlikely.

A cross-section was also prepared for EP-1 (Figure 2-3). As shown in this figure, the water levels in nearby monitoring wells indicates the potential for groundwater seepage into EP-1. In particular, the water level at TP-4, located adjacent to EP-1, is higher in elevation than the EP-1 surface water level. EP-1 has been mostly dry for the past several years, but accumulates surface water during monsoon rain events, which then evaporates. Outside of precipitation events, the dry condition of EP-1 indicates that the evaporation rate exceeds any seepage rate of groundwater.

3.0 SWMU-1 History

SWMU-1 consists of the former ALs, AL-1 and AL-2, and the EP, EP-1 (Figure 1-2). The lagoons and the pond are located in an area approximately 280 ft by 440 ft. AL-1 and AL-2 are approximately 0.3 acres and 0.5 acres, respectively, and EP-1 is approximately 1.3 acres. The Refinery's process wastewater treatment train historically consisted of an American Petroleum Institute separator, benzene air strippers, and an ABTU consisting of AL-1 and AL-2 in series, followed by evaporation in EP-1. AL-1, AL-2, and EP-1 are earthen surface impoundments with native clay functioning as a bottom liner (DiSorbo 2018).

Western Refining (Western) requested closure of the two ALs (Western Refining 2009). NMED responded with a Notice of Disapproval (NOD) and requested additional information (NMED 2009). The disapproval noted that the original submitted plan needed to be a Corrective Measures Implementation Action Plan for a SWMU as described in the NMED fee regulations (New Mexico Administrative Code [NMAC] 20.4.2 [2006]). A Corrective Measures Implementation Work Plan (CMIWP) was subsequently submitted in July of 2009 as requested by NMED in the NOD. The CMIWP was resubmitted and also received a NOD from NMED in June of 2010 (NMED 2010).

During the time that Western was submitting the plan and CMIWP, the USEPA and Western entered into a Compliance and Consent Agreement and Final Order (CAFO) (Docket No. RCRA-06-2009-0936) (USEPA 2009). A modification to the original CAFO was received by Western in 2010 (USEPA 2010). The CAFO modification was in response to an USEPA inspection of SWMU-1. The inspection identified several USEPA violations with respect to the ALs. Pursuant to the CAFO, Western was ordered to take action and provide evidence of compliance for the milestones listed in the agreement. One of the requirements included a CMIWP to be approved by NMED. Several milestones identified included the operation of a storm water management system and an upgraded wastewater treatment system. The completion of the milestones allowed Western to discontinue operation of SWMU-1 and begin corrective measures procedures. The CAFO close-out submittal and evidence of milestone completion were submitted to the USEPA and NMED during the fourth quarter of 2021.

An investigation of SWMU-1 occurred in January of 2020 which included sampling of sludge and soil within AL-1, AL-2, and EP-1. The investigation provided data that allowed the estimation of the volume of sludge that will be removed from SWMU-1 and also characterized the nature of the interface between the sludge and underlying soil. The final report was submitted to NMED in January 2021 (MPC 2021a).

3.1 Waste Managed

The lagoons served as primary and secondary separation of petroleum refinery wastewater and therefore by definition contains primary and secondary sludges (F037/F038) which is listed hazardous waste unless aggressive biological treatment is used. Sediments within EP-1 are not classified as hazardous waste. Based on sampling conducted EP-1 sediments do not likely contain a characteristic hazardous waste. However, NMED has documented that releases into EP-1 have occurred (NMED 2022a). Therefore, MPC requested a NLCI determination (MPC 2022a) to manage the soil removed from SWMU-1 prior to excavation of the ALs and EP planned for 2023. NMED issued an Approval with Modifications for the request (NMED 2022b) and responses to comments were submitted by MPC (MPC 2022b). As a result, SWMU-1 waste will be sampled post-excavation

and will be managed accordingly (i.e., hazardous or nonhazardous per comparison of post excavation stockpile analytical data against regulatory criteria). Investigations pertaining to SWMU-1 are discussed in Section 4.0.

3.2 Estimated Waste Capacity

The area of the lagoons and pond were determined using CADD software. Volumes for excavation and disposal were estimated using the areas and the average depth of contamination, and then rounded to the nearest 100 cubic yards (yds^3), with resulting waste volumes as follows (MPC 2021a):

- AL-1: Average depth 5.2 ft, surface area 13,789 square feet (ft^2), volume 2,700 yds^3.
- AL-2: Average depth 5.3 ft, surface area 23,211 ft^2, volume 4,500 yds^3.
- EP-1: Average depth 5.3 ft, surface area 58,757 ft^2, volume 11,500 yds^3

The Refinery understands that the actual volumes for excavation and disposal may change based on field observations and confirmation sampling during the excavation activities. The Refinery will submit the actual quantities removed in the Excavation Completion Report to be submitted following completion of the work.

4.0 Previous Investigations

Investigations of SWMU-1 have occurred throughout the years to determine remediation efforts and CMIWP requirements. Most recently, investigations were conducted in 2020 and 2021 to provide data needed to develop this CMIWP. A summary of the most recent investigations is described below.

4.1 Historical Investigations

Sampling has been conducted for soil and waste volume determination and chemical characterization several times since the construction of the ALs and EP-1. Initial soil sampling took place in the early 1990s and indicated that no significant impacts had occurred near the ALs from the operation of SWMU-1. Soil sampling was conducted every two years and then reduced to every five years by USEPA request (Western 2009). Groundwater monitoring wells were installed down-gradient of the SWMU-1 in 2004. GWM-1 has not been sampled since third quarter 2015 due to LNAPL detections in the well. GWM-2 and GWM-3 were not sampled in 2019 due to the lack of groundwater in the wells.

Characterization sampling was conducted in 2008 to compare the analytical results to the relevant screening levels and to calculate the approximate volume of waste that would require excavation. Sampling was conducted using a boat because of the presence of water in the ponds. Laboratory sampling analyses of the wastes consisted of total petroleum hydrocarbons (TPH)-diesel range organics (DRO) and TPH-gasoline range organics (GRO) by USEPA Method 8015, semi-volatile organic compounds (SVOCs) by USEPA Method 8270, volatile organic compounds (VOCs) by USEPA Method 8260, RCRA metals by USEPA Method 6010C, and mercury by USEPA Method 7471.

In the “Aeration Lagoons 1 and 2 and Evaporation Pond 1 Sediment Investigation” report (Trihydro 2008), standards for comparison consisted of NMED Industrial SSLs and the USEPA Maximum Concentrations of Contaminants for the Toxicity Characteristic (CFR Title 40 Part 261). The Toxicity Characteristics Leaching Procedure (TCLP) analysis was not performed. In the absence of TCLP analysis, the sample concentrations were divided by 20 and compared to the TCLP standards as the maximum theoretical leachate concentration that could be observed from the sample. This comparison was to evaluate the potential for soils to exceed the TCLP standard and was used as a screening tool. Through this comparison, 26 samples from various waste depths in the three areas exceeded the TCLP limit for mercury, and three samples from AL-1 exceeded the TCLP limit for lead.

As previously stated, the 2008 sampling was conducted when the ponds were flooded, and a boat was required for sample collection. The resulting waste depths and waste volumes were affected by the presence of water. Additional sampling took place in 2020 and is discussed below.

4.2 January 2020 Field Investigation

Sampling took place in January 2020 with the purpose of soil and waste volume determination and chemical characterization. A total of 97 samples were collected from 22 locations, including 10 waste and 12 berm locations. The 2020 samples were analyzed for free liquids to evaluate whether the water accumulating in the lagoons and pond came from outside SWMU-1 or from groundwater. Over 90 percent of the samples exhibited

no free liquids indicating that widespread groundwater infiltration is not likely, but rather water is accumulating at a few isolated locations as a result of precipitation. This determination is supported by the cross-sections in Figure 2-2 and 2-3.

4.3 April 2021 Test Pits Investigation

An additional investigation was completed in April 2021 to confirm if shallow groundwater is present in the area surrounding SWMU-1 and if that groundwater contributes to the shallow surface water observed in the EPs. The Test Pit Installation Letter Report was submitted by MPC (MPC 2021b) and approved by NMED (NMED 2022d). Below is a summary of the investigation findings.

The investigation included excavating four 10 to 15-ft deep test pits (TPs) outside of the internal berms (Figure 4-1). With the exception of TP-4 (adjacent to EP-1), groundwater was not encountered during drilling of the test pits. Damp soils were observed during excavation of TP-1 through TP-3, and water was detected in the test pits the day after installation. Drill cuttings of the test pits were sampled for disposal and indicated non-hazardous soils.

Yield testing of the test pits was conducted following the installation. The yield tests were to determine a pumping rate that would equal the recharge rate of the lagoons and pond. Of the four test pits, three locations had sufficient water for testing (TP-2, TP-3, and TP-4). The yield tests demonstrated that the groundwater has low transmissivity indicative of the clay soils. The yield tests at TP-2 and TP-3 included observing nearby monitoring wells to record any influence from the yield tests. No apparent influence was observed in the monitoring wells during the yield tests, which further indicated low transmissivity.

As shown in Figures 2-2 and 2-3, groundwater elevations in the area of SWMU-1 indicate the following:

- Surface water is ponded on the surface of the ALs after periods of precipitation.
- Groundwater levels in wells and test pits surrounding SWMU-1 are generally below the level of the bottom of the sludge in ponds AL-1 and AL-2 (approximate depth of sludge is 5 to 6 ft as determined during SWMU-1 sludge sampling).
- Groundwater surface elevation and approximate depth of sludge is provided on Figures 2-2 and 2-3.
- The groundwater levels in the area's monitoring wells, in relation to the higher water levels in AL-1 and AL-2, strongly suggest that seepage from groundwater into the ponds has likely not occurred. During excavation, water entrained within the sludge or resulting from precipitation, will be controlled with standard dewatering practices, such as excavating shallow diversion trenches within the sludge or installation of collection sumps.
- The proposed groundwater interceptor trench will be installed if deemed necessary dependent on site conditions and if the excavation is deep enough to intersect groundwater. Post-closure groundwater management is addressed in Section 5.4.

5.0 Corrective Action

SWMU-1 corrective action will include excavation and disposal of the accumulated waste. A description of the planned activities is described in the following sections. Figures with aerial photography have been prepared to illustrate the location of various investigative features (e.g., test pits, etc.). A Preliminary Plan drawing set has been developed to illustrate planned work activities. CMIWP figures and Preliminary Plan drawings are referenced below. A process flow chart is included in Section 5.2.3.

The Refinery agrees to the following general elements for this CMIWP:

- Excavation of SWMU-1 waste
- Disposal of SWMU-1 waste as dictated by post-excavation stockpile waste sampling (i.e., hazardous or nonhazardous waste)
- Confirmation sampling of the excavation sidewall and floor, as proposed in detail below.

5.1 Dewatering SWMU-1

Dewatering activities are anticipated to begin in the 2nd quarter of 2023 to remove standing water in SWMU-1 and will continue as precipitation accumulates. To dewater the SWMU area a suction pipe will be suspended in AL-1, AL-2, and EP-1 as needed to pump water into a frac tank using a diaphragm pump. The collected water from the ponds will treated in the Refinery WWTP.

The results of investigation activities at SWMU-1 indicate that groundwater seepage into SWMU-1 is unlikely for AL-1 and AL-2. For EP-1, the seepage potential is higher, but the currently observed dry conditions of EP-1 indicates that if present, the groundwater seepage rate is low. Should seepage occur into any excavation, typical construction water management methods, such as sumps or drainage ditches will be utilized to collect water for treatment through the Refinery WWTP.

5.2 Construction Plan for SWMU-1

Specific excavation and waste handling processes will be determined as part of contractor selection, and waste handling may involve proprietary processes involving stabilizers, centrifugation, or de-emulsification. Similarly, the Refinery will determine the final disposal site for the waste; multiple facilities may be used depending upon the post-excavation sampling. Specific excavation procedures are outlined below. The project area is illustrated on the Drawings Title Sheet; General Notes are provided on Drawings Sheet 1. Detailed views of the refinery and SWMU-1 work area is shown on Drawings Sheet 2.

5.2.1 SWMU-1 Site Preparation

The initial phase of work will include preparation of the SWMU-1 work area. This phase will include continued dewatering operations (as needed) as discussed in Section 5.1. Berms will be established upgradient of the SWMU-1 work area to convey storm water run-on around the work area (Drawings Sheets 3 and 4). Any accumulated stormwater and water from waste dewatering will be removed and transported to Tank 35, which

is the entry point for the Refinery WWTP. Surface discharges of storm water from the work area will be prevented.

Site survey control will be established to facilitate surveying of the final base of excavation and the final graded surface. Confirmation sampling points will be located with a hand-held global positioning system (GPS) unit that will be tied into the local survey control.

5.2.2 Auxiliary Site Preparation

This activity includes preparation of a waste management area, development of the backfill borrow source, and coordination of movement of materials in and out of the SWMU-1 work area.

Borrow Area

Depending on the waste characteristics during excavation and onsite handling prior to transportation offsite, stabilization of the waste may be required. Stabilization may involve absorption of free liquids, such as water or residual separate phase hydrocarbon. Locally available soil from the Refinery's borrow area (Drawing Sheet 2) may be required for this purpose. Alternatively, spent zeolite catalyst is available and may be utilized as an adsorbent material that would be incorporated post-excavation if needed. Analytical characterization data for this material is presented in Appendix B.

The Refinery's onsite borrow pit will also be utilized to source soil for backfilling the SWMU-1 excavation. As refinery impacts have been documented below the floor of the borrow area, no borrow soil will be removed from the floor of the borrow pit. It is anticipated that borrow material will be removed from the unexcavated northern face of the borrow pit above the impacted soil. A subsurface investigation was performed via geoprobe drilling to collect soil samples that were submitted for laboratory analyses (VOC, SVOCs, metals, and TPH-DRO, -GRO, and motor oil range organics [MRO]) to document that the proposed borrow pit soil is acceptable for use as clean backfill. A discussion of the analytical data results is provided in Section 5.6. The analytical data and a figure illustrating the boring locations is provided in Appendix 3

Site prep may include any or all of the following activities:

- Improvement of area access roads to ensure efficient flow of trucks to/from the borrow pit
- Stormwater management as needed to reduce the potential for excessive sediment transport

Stockpile Area

A stockpile area will be constructed adjacent SWMU to provide space for placement of stabilized waste stockpiles. A primary stockpile area will be established east of EP-1 (Drawing Sheet 2). A secondary stockpile area will be established if needed west of AL-2 (Drawing Sheet 2). Coordination with the Refinery will be required to determine the best route for vehicular access.

The stockpile area(s) will be constructed per the detail on Drawing Sheet 4. The stockpile area will be constructed on relatively flat ground with vegetation removed. The resulting surface will be smooth drum rolled to provide a firm, unyielding surface. A sacrificial high-density polyethylene liner will be laid on the prepared

surface, followed by a minimum 1 ft layer of sacrificial fill material to serve as a working surface. Berms with an equipment-mountable entrance will be utilized to prevent migration of stormwater run-on and runoff. Ponded precipitation would be removed via vacuum truck for transport to Tank 35 for treatment through the WWTP.

Decontamination Area

A decontamination (decon) area will be required at the lagoons loadout area to prevent the spread of excavated waste. Waste loadout will be performed in such a manner to reduce the amount of waste contacting the exterior of the truck body. Loose waste will be removed from truck bodies via brooms or with water spray if necessary. Decon pads will be graded such that removed waste is conveyed into sumps for removal via backhoe for management and disposal. Decon fluids within the sumps shall be removed via vacuum truck and transported to the Refinery's WWTP for treatment.

5.2.3 Waste Excavation

Waste excavation is anticipated to commence in AL-1 first due to its location upgradient of AL-2. Excavation equipment is expected to be utilized to remove the sludge from lagoons. As excavation proceeds, clean borrow or berm material will be incorporated into the waste within the lagoons to improve workability. Stabilized waste will be loaded into off-road trucks for transport to stockpile area(s) for post-excavation sampling (Section 5.3.1).

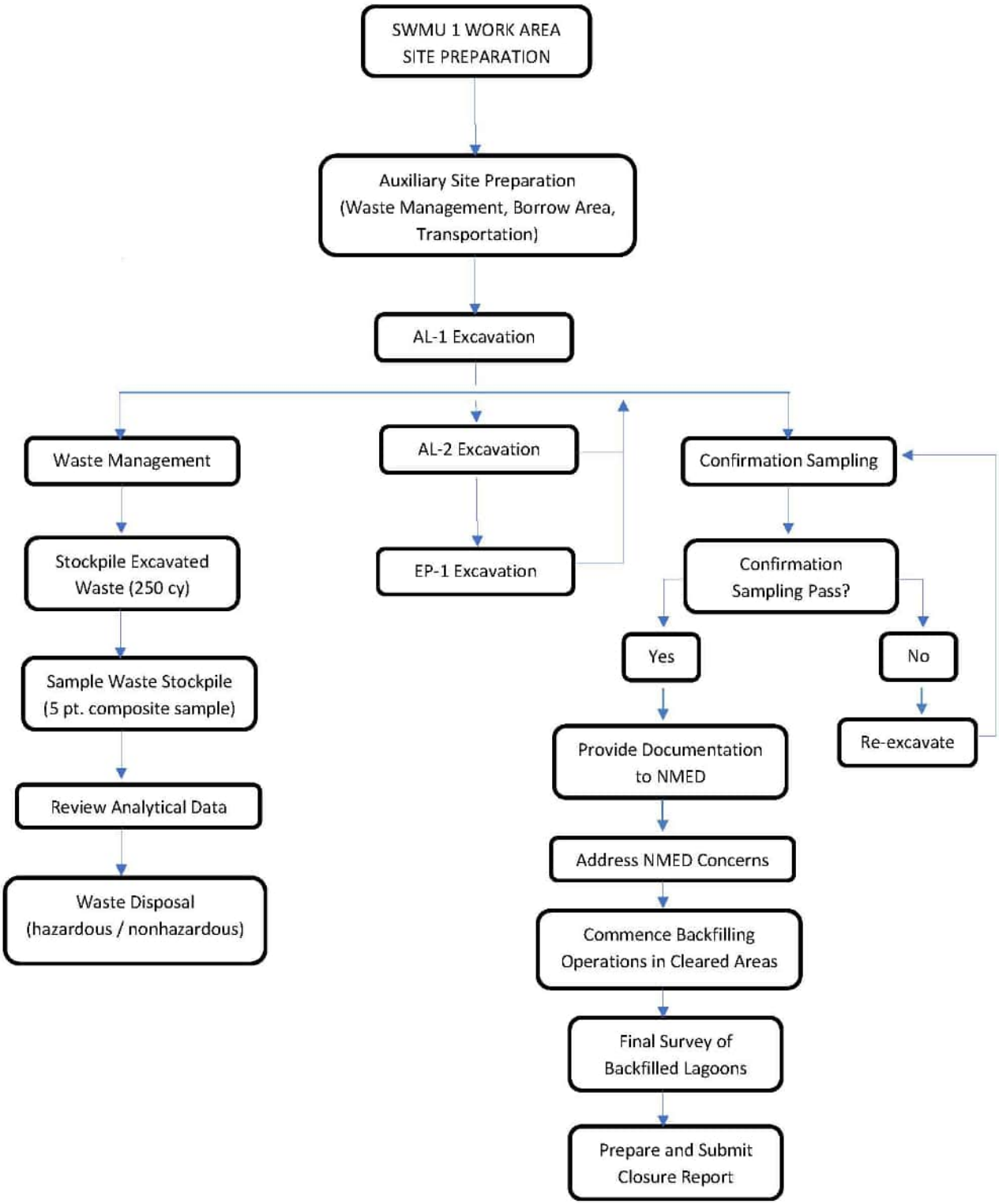
Excavation depth will be determined from field observations of a distinct color change in the clay liners of the ponds. This color change is anticipated to be accompanied by an abrupt change of contaminant concentrations, as documented in the SWMU-1 sampling results report (MPC 2021a) and as summarized in Table 1. As summarized in this report, flame ionization detector (FID) field screening results also exhibited a correlation with TPH-GRO, TPH-DRO and TPH-oil range organics laboratory results. TOV field screening will involve putting material in a sealed plastic bag, then measuring the headspace with a FID or a photoionization detector (PID). As an alternative, the Refinery may deploy a combustible gas indicator to screen for contaminant concentrations in situations where high moisture content soil interferes with FID operation.

5.2.4 Berm Excavation

The berms separating and surrounding the lagoons will be removed during the excavation process. As discussed in correspondence to NMED (MPC 2021a), the upper 1.5 ft of berm soil will be excavated and segregated for composite soil testing to determine suitability for use as backfill. Soil will be tested for the following constituents: VOCs, SVOCs, metals, and TPH-GRO, -DRO, and -MRO at a frequency of one sample for every 100 yd^3 of segregated material. The soil will be required to meet NMED Residential Soil Standards for use as backfill. Berm soil underlying the upper 1.5 ft will be segregated and evaluated for disposal at a permitted TSD facility.

The following flow chart depicts the sequence of work activities for the SWMU-1 waste management and follow-on sampling activities. These specific tasks are detailed in Sections 5.3 and 5.4.

SWMU-1 CMIWP Flow Chart



5.3 Excavated Waste Management

The procedure for managing waste once it is excavated from SWMU-1 is detailed below. The following procedure follows that outlined in MPC's responses to comments (MPC 2022b) to NMED's Approval with Modifications for the NLCI designation request (NMED 2022b).

5.3.1 Post-Excavation Waste Sampling and Analysis Plan

Post-excavation waste sampling will be utilized to confirm the waste excavated from SWMU-1 are not a hazardous waste as outlined in the response to NMED's Approval to the NLCI Determination Request (MPC 2022b). The excavated soils will be temporarily stockpiled into multiple separate piles within the Stockpile Area in SWMU-1. The stockpiles will be in a segregated stockpile area and managed in accordance with the temporary storage requirements of New Mexico Administrative Code (NMAC) 20.9.8, and not stored for longer than 90 days from the date the waste is placed in storage awaiting transportation, processing, or final disposal, unless the material is determined to be non-hazardous through sampling or otherwise approved by the NMED Solid Waste Bureau (SWB).

Sampling frequency for purposes of NLCI verification will be one, 5-point composite sample per 250 yds^3 stockpiled. Composite samples will be analyzed for pH, VOCs, SVOCs, , TPH-GRO, TPH-DRO, TPH-ORO, ignitability, corrosivity, and TCLP for all detected analytes shown on Table 2. Additionally, each composite sample will be analyzed for all waste acceptance criteria that may be required for the designated landfill(s). Composite aliquots will be collected at various depths and locations in the temporary stockpiles.

Post-excavation composite sample analytical results for each stockpile will be compared to TCLP screening levels and the designated landfill requirements. If the sampling analysis confirms that the excavated soil is not characteristically hazardous waste and the concentration of hazardous waste constituents do not present a threat to human health and the environment after placement in a nonhazardous waste disposal facility (i.e., the two NLCI criteria), the waste will be managed as a solid waste. If any post-excavation sampling results in values above hazardous waste TCLP screening levels, said waste will be segregated and managed per NMED requirements.

5.3.2 Disposal Management Plan

If post-excavation samples verify that the contaminated media excavated from SWMU-1 meets the two NLCI criteria required for an NLCI determination, the contaminated media would then be considered "special waste," as defined under Subsection S of NMAC 20.9.2.7 (NMAC 2007). "Special waste" is defined, in part, as "solid waste that has unique handling, transportation, or disposal requirements to assure protection of the environment and the public health, welfare, and safety, including:…(f) sludge, except; sludge that is land applied under 40 CFR Part 503 as intermediate or final cover at a landfill and meets the requirements of Subpart B of 40 CFR Part 503;…(i) petroleum contaminated soils, that have a sum of benzene, toluene, ethylbenzene, and xylene isomer concentrations of greater than 50 mg/kg, or benzene individually greater than 10 mg/kg, or a total

petroleum hydrocarbon concentration of greater than 100 mg/kg."[1] Therefore, petroleum contaminated soils that have a TPH concentration of greater than 100 milligrams per kilogram are regulated by NMED SWB as special waste.

Facilities permitted to accept certain special waste in NM require the generator to submit a Disposal Management Plan (DMP) and receive approval from the NMED SWB for each special waste accepted at the facility.[2] The DMP is provided in Appendix D.

5.4 CMIWP Sampling and Analysis Plan

Post-excavation confirmation samples will be collected from SWMU-1 excavation floors and sidewalls. Proposed sampling locations will include vertical sampling of lagoon floors and horizontal sampling and excavation sidewalls.

5.4.1 Confirmation Soil Sampling Frequency

Following are the frequencies specified by NMED (NMED 2010) for confirmation sampling:

- Grid spacing of approximately 30 ft for all faces of the excavation (bottom and sides). This will equate to a coverage of one sample approximately every 900 ft^2 for the bottom of the excavation.
- All sidewall confirmation samples will be collected from two locations: one soil sample will be collected from the sidewall at the base of the excavation, and the other soil sample must be collected approximately 5 ft below the base of the average pond surface water line. In areas where these dimensions are separated by less than three vertical ft, then only one sidewall sample will be collected from the base of the excavation.
- For areas requiring additional excavation, the resampling will be spaced every 20 ft to confirm removal of impacted material. This will equate to a single sample up to 400 ft^2 of re-excavated area and then an additional sample for every additional 400 ft^2 area. Re-excavated sidewalls will be sampled by collecting one sample from the base of the re-excavated sidewall at 20 ft intervals.
- Sampling below the base of the excavation will be performed by collecting samples at a total depth of 5 ft below the bottom of the excavation. The frequency of this sampling will equal ½ of the total confirmation samples collected from the base (i.e., if 20 samples are collected from the base of the excavation, then 10 samples will be collected from a depth of 5 ft below the base).

[1] *See* 20.9.2.7.S(13) NMAC for definition of "special waste."

[2] *See* New Mexico Environment Department's Guidance Document "Special Waste Management Information."
[3] *See* New Mexico Environment Department's Guidance Documents "Sludge Disposal Management Guidelines and Example."

- Additional sidewall samples will be collected from 3 ft into the sidewalls to demonstrate that contamination has not migrated laterally. The frequency of the deeper sidewall samples will be one sample per sidewall at a location approximately 5 ft below the base of the average pond surface water line.
- Each sample collected for laboratory analysis will be a discreet sample; composite sampling will not be utilized.

Samples will be analyzed for the following constituents:

- Metals (including Mercury), USEPA Method 6010
- SVOCs, USEPA Method 8270
- VOCs, USEPA Method 8260
- TCLP (for hazardous list)
- TPH-GRO, -DRO, and -MRO, USEPA Method 8015
- FID/PID – Headspace sampling

The Refinery will utilize an accredited laboratory for all soil analyses. Analytical data will be screened by comparison with NMED Residential SSLs. If Residential SSLs are not met, then Industrial and construction worker SSLs will be utilized for confirmatory sampling. USEPA Residential, Industrial, and construction worker SSLs will be used where NMED standards are not established. Use of Industrial and construction worker SSLs will require the application of institutional controls and long-term operations and monitoring activities.

5.4.2 Soil Sample Collection

Soil sampling for this CMIWP will be required for confirmation sampling following excavation, and for characterization of waste, The following procedures will be followed by field staff collecting samples during execution of this CMIWP.

5.4.2.1 Equipment

Field screening equipment will be inspected prior to beginning work. For soil sampling, the only field monitoring equipment used will be a PID or other approved screening instrument. Instruments will be calibrated daily and will be operated according to manufacturer's recommendations.

The following equipment is recommended for soil sampling:

- Required personal protective equipment, listed in the site-specific health and safety plan (HASP)
- Soil sampling devices (i.e., hand auger, shovel) and stainless-steel trowels and bowls for composite sample mixing when needed

- Sampling beaker, bottles, labels, and preservatives
- Gloves
- Chain-of-custody/sample-analysis-request forms
- PID, FID or other approved screening instrument
- GPS unit
- Opaque Cooler(s) and bagged ice or frozen Blue Ice
- Detergent or solvent for cleaning monitoring equipment
- Brushes dedicated for decontamination
- Decontamination containers dedicated for wash, rinse 1, and rinse 2
- Deionized water for decontamination
- Paper towels
- Trash bags
- Field logbook

5.4.2.2 Sample Methodology

Selection of equipment and technique should be appropriate for the volume of material required and the type of analysis to be performed. In general, the sampling equipment and technique will be chosen to minimize, to the extent possible, the amount of handling a sample will undergo prior to analysis. In many cases, the material to be sampled will be easy to access, and simple "grab" samples collected using a shovel, trowel, or drive sampler are appropriate. In other cases, such as heavily saturated samples, the soils may be difficult to access, and sampling will involve the use of specialized soil sampling equipment. All soil samples for laboratory analyses shall be obtained from undisturbed cores or freshly excavated soil that is representative of field conditions.

Soil samples for SVOC or metal analysis located in dry areas will be collected from representative locations using a decontaminated hand auger, shovel, hand trowel. The sampling device will be driven into the material manually or using a manually operated auger, drive hammer, or mallet. The sample will then be extracted from the material using a decontaminated hand trowel or shovel as needed. The material will placed directly from the trowel or other appropriate sampling device into a clean glass jar. The jar will be filled completely to minimize headspace (by tamping during filling), and immediately sealed with a Teflon-lined lid. Samples collected for VOC analyses will be obtained using Encore or equivalent sampling devices to collect undisturbed samples.

If necessary, several samples may be collected from each location to provide adequate sample volume for the laboratory. The sample containers will be labeled with indelible ink. Filled sample containers will be wiped dry and placed in a cooler with ice (or equivalent) for storage at the time of collection. Enough ice and protective packing material should be used to cool the samples to 4°C and ensure that the container remains intact prior to final packing and shipment.

Field screening may involve the use of a PID, FID or approved instrument. In this case, the sample will be split into two aliquots. The bag containing Aliquot #1 will be sealed and shaken gently to expose the sediment to the air trapped in the container. Note that if samples are cold (i.e., below 32 degrees Fahrenheit), they will be sealed in airtight bags and warmed in a heated building and/or vehicle before screening. The sealed container will be allowed to rest while vapors equilibrate. Vapors present within the sample bag's headspace will be measured by inserting the probe of the instrument in a small opening in the bag. The PID/FID value and the ambient air temperature will be recorded on the field boring log for each interval. Aliquot #1 will be used for PID/FID screening only. Aliquot #2 will be placed into a second plastic bag, sealed, placed in a cooler, and stored on ice for potential laboratory analysis.

The Aliquot #2 materials that correspond to the sample depths selected for laboratory analysis will be transferred into the appropriate glass sample jar, labeled, and placed in a cooler. Before shipment, each cooler will be packed with ice and a laboratory-provided trip blank. A chain of custody form will accompany each sample shipment. Coolers will be sealed and delivered to an accredited laboratory. All samples shall be screened as close to the same ambient temperature as possible to obtain consistent results.

Sampling devices will be decontaminated between sampling locations using a four-stage decontamination system consisting of a two detergent/water washes and two deionized water rinses. Decontamination fluids will be containerized and treated in the Refinery's WWTP. Sample locations will be recorded with a GPS unit in order to accurately map the confirmation sampling locations.

Field logbooks, Soil Sampling Field Log (example provided in Appendix E), and Photograph Logs will provide a written record of field data gathered, field observations, field equipment calibrations, the samples collected for analysis, and sample custody. Color photographs will be used to substantiate and augment the field notes, if necessary. Field records will be maintained in the project file.

5.4.3 Field QA/QC Procedures

The procedures outlined below shall be followed by the sampling team to ensure reliable data are generated during each sampling event. The sampling team will record conditions and observations in a field notebook, daily activity record sheet, or sample event activity sheet to document the sampling activities, conditions, and observations. In addition, the quality assurance/quality control (QA/QC) samples that may be used to ensure reliable data are described in the following sections:

- Blind Duplicate: Blind duplicate samples will be collected at a rate of one for every ten soil samples collected, or at a minimum of one per day.

- Equipment Blank: Equipment blanks will be collected from the hand-auger at a rate of one for every ten soil samples collected, or at a minimum of one per day.

- Trip Blank: One trip blank will be included in each cooler shipped from the Refinery to the laboratory. The trip blank will be prepared by the laboratory. The trip blank analytical results will be used to document and check for potential cross contamination during shipping.

5.4.4 Laboratory QA/QC Procedures

The QA/QC program employed by the contract laboratory will be evaluated to document the quality of analytical data generated from each sampling event. The guidelines used will follow USEPA protocol. The results from blanks, duplicates, and spike samples will be employed to assess the validity of analytical data. The guidelines to be followed by the laboratory may include but are not limited to:

1. Method Blanks: Method blanks are "clean" matrix similar samples prepared and analyzed by the laboratory. Analysis of the method blank is used to identify laboratory derived contaminants introduced during sample preparation, extraction, and analysis. Method blanks will be analyzed at a frequency of one per sample batch or 12-hour period by the laboratory. A batch consists of three samples or less analyzed at the same time using the same method.

2. Initial Calibrations: Initial calibration standards containing both target compounds and system monitoring compounds are analyzed at a range of concentrations at the beginning of each analytical sequence. Initial calibration standards are also analyzed if the percent difference between the initial calibration and the continuing calibration is not within the method specified limits. Compliance limits specifying the acceptable range for instrument calibration are established to document the analytical instrument is capable of quantifying the target compounds within the reporting requirements.

3. Continuing Calibration Verification: Continuing calibration verifications are performed routinely to document the instrument remains within the initial calibration configuration and to demonstrate quantified data are within reporting limits. Continuing calibration standards consisting of both target compounds and system monitoring compounds are analyzed at the beginning of each 12-hour sample batch following the analysis of the instrument performance check and prior to the analysis of the method blank. The continuing calibration relative response factor will be compared to the method specific limits. The percent difference between the initial calibration and the continuing calibration will be determined and compared to method specified limits.

4. Laboratory Control Spike (LCS) (Performance Evaluation Samples): LCSs are "clean" matrix similar samples prepared by the laboratory and spiked with a known concentration of constituents prior to extraction and analysis. The LCS is used to evaluate laboratory accuracy and method compliance. The LCS will be prepared and analyzed by the laboratory at a frequency of one per every three samples analyzed or one per sample batch.

5. Surrogate Spiking: Surrogate compounds consist of laboratory derived compounds that are introduced to each sample submitted to and prepared by the laboratory prior to extraction and analysis. The surrogate compounds spiked to each sample are specific to the laboratory analytical method. Quantification of the surrogate compounds allows for determination of matrix effects and laboratory performance on individual samples.

6. Holding Times: Samples will be analyzed within a time period beginning on the day the sample was collected and specific to the type of analysis performed. It will be the responsibility of the laboratory to meet these time constraints.

Deliverables from the laboratory, received via email, will include a standard QA/QC package with the following pertinent information, as appropriate:

- Dates Report (Procedure and Analyses Times)
- Case narrative
- Final completed chain of custody form
- Sample results
- Quality Control result summary
- Additional performance criteria specific to analytical methods
- Laboratory method detection limit identification/verification

5.4.5 Reporting Limits

For non-residential properties (e.g., the Refinery), the soil screening levels must be protective of commercial/industrial workers throughout the upper one foot of surface soils and construction workers throughout the upper 10 ft based on NMED criteria. As a result, institutional controls (i.e., post-closure care) will also be implemented as part of the corrective action.

5.4.6 Quality Assurance

The analytical sampling results will undergo data validation by Trihydro. Data qualifiers may be applied to the analytical results based on holding times, laboratory QA/QC results, and other results that could impact the quality of the data. Data qualifiers will be reported in the Excavation Completion Report.

5.5 Installation of Groundwater Interceptor Trenches for Future Control of Groundwater

Following excavation of the waste in AL-1 and EP-1, a groundwater interceptor trench may be installed on the eastern, upgradient side of SWMU-1 in the location shown on Drawing Sheet 3 to reduce the potential of impacted groundwater contacting clean backfill in the area. The proposed groundwater interceptor trench will

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be installed if deemed necessary dependent on site conditions and if the excavation is deep enough to intersect groundwater. Based on the depth of local groundwater, the expected depth of the trench is approximately 5 ft bgs at the bottom of the excavation. The trench, if needed, would be constructed at the bottom of the final excavated surface. A cross section of the interceptor trench is shown on Drawing Sheet 4. During backfill, a sump will be installed into the interceptor trench, which will consist of 4-inch polyvinyl chloride pipe. This sump will be brought to the surface to allow access for pumping of the trench, if groundwater levels indicate that this is required. Groundwater from these sumps will be tied into the permanent groundwater recovery system (Phase 2) that is scheduled for completion in 2023.

5.6 Excavation Backfill

Following excavation and confirmation sampling of each aerobic lagoon, NMED will be provided with analytical data and will have the opportunity to review the results prior to beginning placement of backfill.

5.6.1 Backfill Sampling

Excavation backfill will be sourced from onsite borrow material, anticipated to be the currently existing borrow pit which provides a source of clay-rich soil. Soil samples were collected from the borrow pit via geoprobe for chemical analyses to ensure that unimpacted material is utilized for SWMU-1 backfill. Soil borings were drilled in February 2022. The borings were positioned to determine if the borrow pit soil is acceptable for fill at SWMU-1. Soil was tested for the following constituents: VOCs, SVOCs, metals, and TPH-DRO, -GRO, and -MRO. Appendix C provides Figure C-1 that illustrate the locations of the borings and Tables C-1 (VOCs), C-2 (SVOCs), C-3 (metals), and C-4 (DRO, GRP and MRO) provides analytical data.

Laboratory analyses did indicate the presence of GRO in several of the borings on the western edge of the borrow area (i.e., BPI-1, -2, -3, -5, -10, and -11) as shown on Figure C-1. Soil from areas with GRO impacts will not be excavated for use a borrow material.

5.6.2 Backfill Operations

Backfill soil will be transported to SWMU-1 as needed. Soil will be placed in 1-ft lifts and compacted with approved equipment to create a firm, unyielding surface. Soil placement and compaction will continue until final grades are achieved as approximated in Drawing Sheet 3. The final surface will provide drainage to minimize ponding. The former SWMU-1 area will be reserved for future Refinery operations.

5.7 Reporting

A summary report will be prepared that describes the excavation, waste handling, sampling and analysis, and backfilling of SWMU-1, including tables and figures. Laboratory analytical reports will also be included. The Refinery will submit one report covering the SWMU-1 activities scheduled for 2023 . As discussed above, the Refinery expects an interim review and approval of confirmation sampling results by the NMED. The purpose for receiving NMED approval prior to backfill will be used to reach agreement on remedy being reached prior to backfill.

5.8 Long-Term OM&M

Long-term OM&M will include maintenance of the interceptor trenches (if installed) within SWMU-1, and inspections and maintenance (when needed) of the backfilled cover soil. Each activity is addressed below.

The proposed groundwater interceptor trench will be pumped as required to produce a hydraulic depression that will impede groundwater migration westward across the SWMU-1 footprint. Initially, this pumping will be conducted using a vacuum truck and the recovered water will be pumped into Tank 35 for treatment within the Refinery WWTP. The volume of water recovered will be recorded and reported as part of the Refinery's routine reporting. Provisions will be made to connect the trench to the groundwater collection system under construction at the Refinery.

Associated SWMU-1 storm water drainage components (cover soil, outlets, etc.) will be inspected, monthly and after major storm events, to ensure proper flow toward outfalls 1 and 2. Inspections will include checking for erosion of cover soil, drainage channels, and/or berms, identifying any growth and/or debris in drainages that may prohibit proper flow, and inspecting culverts for blockage. In the event that maintenance is required, the Refinery will address the issue as soon as practical. These inspections will be documented as part of ongoing environmental monitoring operations.

6.0 Work Contracting

The Refinery intends to solicit contractor competitive proposals and bids for the excavation, waste management and backfill of SWMU-1. Prospective contractors will be provided with a bid package and a bid walk will be held to enable development of competitive bids. Prospective contractors will be encouraged to propose methods of waste handling and treatment that minimize the volume of the waste and any residual hazard posed by the excavated and stabilized waste.

The Refinery expects to retain separate contractors for the SWMU-1 excavation, construction management, and environmental monitoring and sampling. All contractors will be HAZWOPER certified and will meet the qualifications lined out in USEPA regulations. The environmental contractor will provide the equipment, materials, and labor to execute the work, including sludge excavation. The Refinery anticipates that the excavation contractor will submit the following plans:

- Excavation and waste handling operations
- HASPs
- Temporary storm water management plan for construction
- General project management

In addition, the excavation contractor must provide proof of necessary health and safety training, including but not limited to HAZWOPER and Refinery-specific training.

Duties of the construction management/environmental contractor will include:

- Overall construction management authority with a direct reporting to the responsible Refinery PM
- Preparation of an organization chart, including lines of communication to the Refinery PM
- Review and approval of the excavation contractor's HASP
- Daily health and safety briefing, including tailgate safety forms and job safety analysis forms
- Daily preparation of field activity daily logs, including, but not limited to progress notes, equipment used on site, number of contractor personnel
- Collection and field sampling of field screening samples, including waste description, color, and other gross characteristics
- Calibration of field equipment, such as FID and air monitoring instruments

- Documentation of waste transportation
- Collection of stockpile samples and confirmation samples for submission to the laboratory

All onsite personnel will have stop work authority. Emergency services are covered by the Gallup Fire Department.

7.0 Schedule

The schedule of CMIWP activities was submitted to NMED originally in April 2021 and approved in June 2021. An updated schedule covering activities in 2023 is included as Appendix A. The Refinery expects SWMU-1 excavation and backfill operations to be completed in 2023. A final implementation report will be submitted in 2024 for SWMU-1.

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8.0 References

DiSorbo. 2018. Investigation Work Plan Solid Waste Management Unit (SWMU) No. 1 Aeration Basin and SWMU No. 14 Old API Separator. Gallup Refinery, Western Refining Southwest, Inc., Gallup, New Mexico. November.

MPC. 2021a. SWMU-1 Revised Investigation Report, Marathon Petroleum Company LP, Gallup Refinery (dba Western Refining Southwest, Inc) EPA ID# NMD000333211. January.

MPC. 2021b. SWMU-1 Test Pit Installation Letter Report, Marathon Petroleum Company LP, Gallup Refinery (dba Western Refining Southwest, Inc) EPA ID# NMD000333211. October.

MPC. 2022a. Request for No Longer Contained-In Determination, Solid Waste Management Unit 1, Western Refining Southwest LLC - dba Marathon Gallup Refinery, EPA ID# NMD000333211. September 14.

MPC. 2022b. Response to Approval with Modifications, Request for a "Contained-In" Determination for Contaminate Media Associated with SWMU-1, Aeriation Lagoons AL-1 and AL-2, and Evaporation Pond EP-1, Western Refining Southwest LLC - dba Marathon Gallup Refinery, EPA ID# NMD000333211. December.

New Mexico Administrative Code (NMAC). 2006. Title 20 – Environmental Protection Chapter 4 – Hazardous Waste Part 2 – Hazardous Waste Permit and Corrective Action Fees. (20.4.2). August.

NMAC. 2007. Title 20 – Environmental Protection Chapter 9 – Solid Waste Part 2 – Solid Waste Management General Requirements. (20.9.2.7). August.

New Mexico Environment Department (NMED). 2009. Notice of Disapproval, Closure Plan Aeration Lagoons, Western Refining Company, Southwest, Inc., Gallup Refinery, EPA ID # NMD000333211, HWB-GRCC-09-003. May.

NMED. 2010. Second Notice of Disapproval, Corrective Measures Implementation Work Plan, SWMU-1, Wastewater Aeration Lagoons, Western Refining Company Southwest, Inc., Gallup Refinery, EPA ID # NMD00333211, HWB-GRCC-09-003. June.

NMED. 2017. Notification of Determination, Hazardous Waste Management Unit, Aeration Basin, Western Refining Company Southwest, Inc., Gallup Refinery, EPA ID # NMD00333211, HWB-WRG-17-MISC. February.

NMED. 2019b. 2019 NMED Risk Assessment Guidance for Site Investigations and Remediation. February.

NMED. 2022a. NMED video conference with MPC to discuss SWMU-1 Closure Plan Comments. January 24.

NMED. 2022b. Approval with Modifications, Request for a "Contained-In" Determination for Contaminate Media Associated with SWMU-1, Aeriation Lagoons AL-1 and AL-2, and Evaporation Pond EP-1, Western Refining Southwest LLC - dba Marathon Gallup Refinery, EPA ID# NMD000333211. November.

NMED. 2022c. Final RCRA Post-Closure Permit, Western Refining Company Southwest, LLC, Gallup Refinery, EPA ID # NMD00333211. February.

NMED. 2022d. Approval with Modifications, SWMU-1 Test Pit Installation Letter Report, Western Refining Company Southwest, Inc., Gallup Refinery, EPA ID # NMD00333211, HWB-WRG-21-018. January 3.

Trihydro Corporation (Trihydro). 2008. Aeration Lagoons 1 and 2 and Evaporation Pond 1 Sediment Investigation, Western Refining Company, Gallup Refinery, Gallup, New Mexico. June.

United States Environmental Protection Agency (USEPA). 2009. Complaint and Consent Agreement and Final Order, Docket No. RCRA-06-2009-0936. August.

USEPA. 2010. Re: Western Refining Complaint, Consent Agreement and Final Order Modification. August.

USEPA. 2021. Regional Screening Tables. May.

Western Refining. 2009. Closure Plan Aeration Lagoons, Western Refining Company Southwest, Inc., Gallup Refinery, EPA ID # NMD00333211, HWB-GRCC-09-003. February.

Figures

T 15 N

WESTERN REFINING SOUTHWEST, LLC GALLUP REFINERY

R 15 W

Image Cite: U.S. Geological Survey, 1:24,000–Scale 7.5 Minute Digital Raster Graphic Quadrangle, McKinley County, Publication: 2004

NEW MEXICO

QUADRANGLE LOCATION

NOTE:
SITE LEGAL DESCRIPTION -
TOWNSHIP 15 NORTH,
RANGE 15 WEST, SECTION 33

N

0 2,000'

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FIGURE 1-1

REFINERY LOCATION

WESTERN REFINING SOUTHWEST, LLC
MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO

Drawn By: REP	Checked By: BM	Scale: 1" = 2,000'	Date: 7/19/2021	File: 697-CP-REFINERYLOC

M:\TON\MARATHON\CADD\GALLUP_REPORTS\SWMU\SWMU1_EVAPPONDCLOSURE\CLOSUREPLAN\697-CP-REFINERYLOC

EXPLANATION

MONITORING WELL LOCATION

NOTES:

AL - AERATION LAGOON
EP - EVAPORATION POND
SWMU - SOLID WASTE MANAGEMENT UNIT

N

0 80'

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FIGURE 1-2

SWMU 1 AERIAL PHOTOGRAPH (MAY 2018)

WESTERN REFINING SOUTHWEST, LLC MARATHON GALLUP REFINERY GALLUP, NEW MEXICO

Drawn By: KEJ	Checked By: CF	Scale: 1 " = 80 '	Date: 9/2/21	File: 1-2_SWMU1_Fig1-2.mxd

M:\TRIHYDRO\MARATHON\GIS\PROJECTS\GALLUP\REFINERY\SWMU1_AERATIONBASIN\REPORTS\CLOSUREPLAN\2021\1-2_SWMU1_FIG1-2.MXD

EXPLANATION

MONITORING WELL LOCATION FOLLOWED BY GROUNDWATER ELEVATION IN FEET

LINE OF EQUAL ELEVATION OF POTENTIOMETRIC SURFACE (FEET ABOVE MEAN SEA LEVEL)

NOTES:

AL - AERATION LAGOON
EP - EVAPORATION POND
SWMU - SOLID WASTE MANAGEMENT UNIT

N

0 120'

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FIGURE 2-1

SWMU-1 CHINLE/ALLUVIUM INTERFACE AQUIFER POTENTIOMETRIC SURFACE MAP (NOVEMBER 2020)

**WESTERN REFINING SOUTHWEST LLC
MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO**

Drawn By: KEJ	Checked By: CF	Scale: 1 " = 120 '	Date: 8/23/21	File: 2-1_SWMU_PotSurface_Fig2-1.mxd

M:\TRI\MARATHON\GIS\PROJECTS\GALLUP\REFINERY\SWMU_AERATION\REPORTS\CHINLE\SURFACE_FIG2-1.MXD

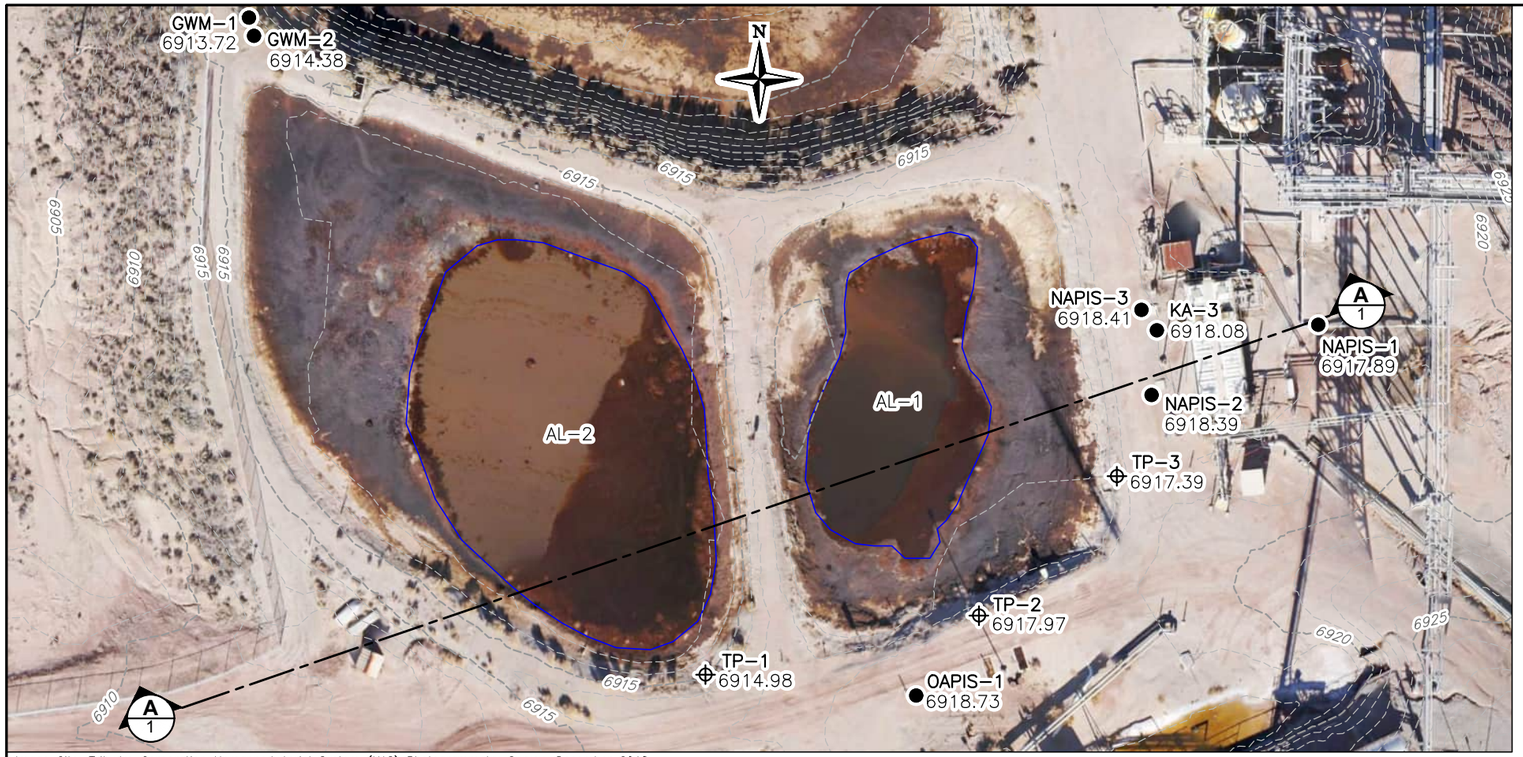
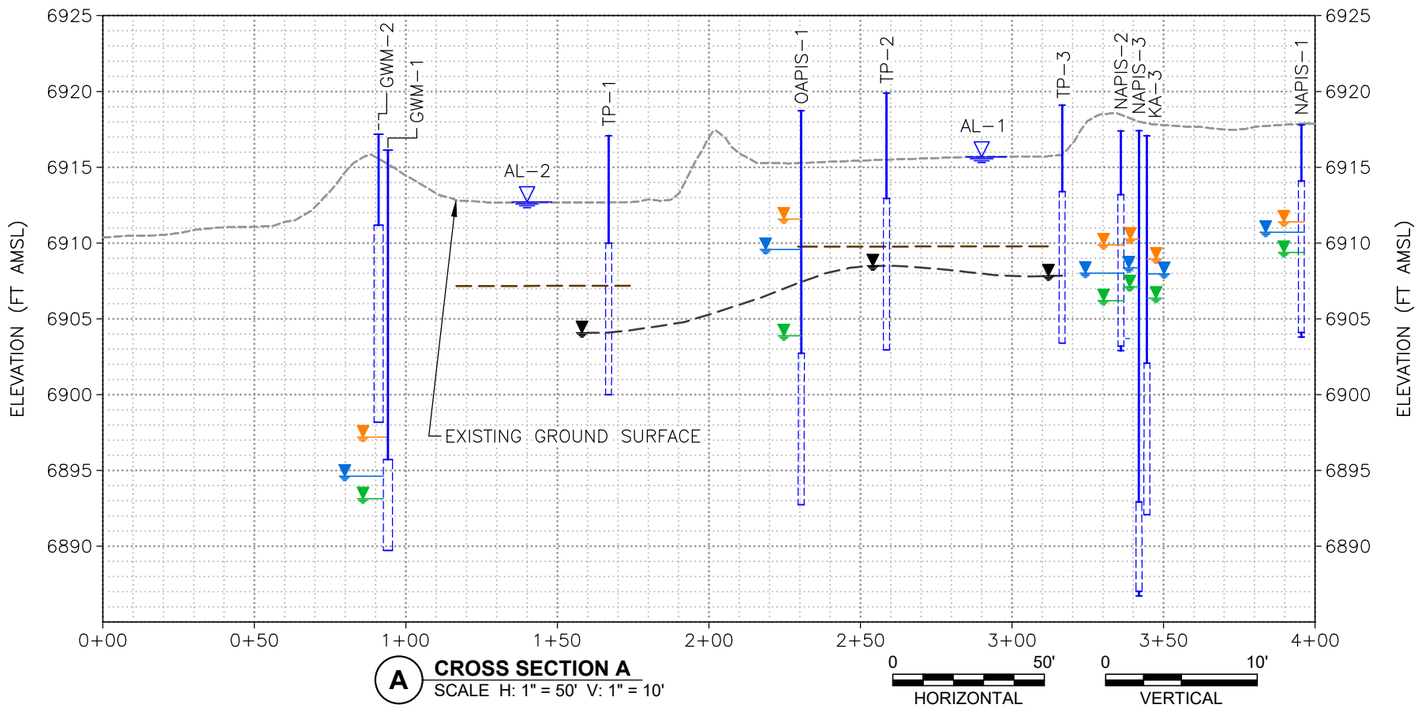


Image Cite: Trihydro Corporation Unmanned Aerial System (UAS) Photogrammetry Survey, December 2018

1 CROSS SECTION A PLAN VIEW

SCALE: 1" = 50'

0 50'



A CROSS SECTION A

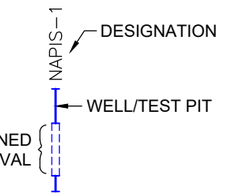
SCALE H: 1" = 50' V: 1" = 10'

0 50' HORIZONTAL

0 10' VERTICAL

EXPLANATION

TP-1	TEST PIT AND DESIGNATION
OAPIS-1	MONITORING WELL AND DESIGNATION
6917.89	GROUND SURFACE ELEVATION (FT AMSL)
	POND WATER SURFACE
	WATER LEVEL (MAY 4, 2021 DATA)
	MINIMUM DTW (2011-2020)
	AVERAGE DTW (2011-2020)
	MAXIMUM DTW (2011-2020)
	APPROXIMATE DEPTH OF SLUDGE/TOP OF CLAY LINER
6600	SURFACE CONTOUR (1' INTERVAL)
	WATER BOUNDARY
AL	AERATION LAGOON
DTW	DEPTH TO WATER
FT BGS	FEET BELOW GROUND SURFACE
FT AMSL	FEET ABOVE MEAN SEA LEVEL
NAPIS	NEW API SEPARATOR



WATER LEVEL DATA (2011 - 2021)

WELL	NO. OF DATA POINTS	DEPTH TO WATER, FT BGS		
		MAXIMUM	MINIMUM	AVERAGE
NAPIS-1	39	8.41	6.40	7.08
NAPIS-2	39	10.29	7.15	9.05
NAPIS-3	38	11.19	7.51	9.38
OAPIS-1	33	14.85	8.66	9.75
KA-3*	21	10.72	8.14	9.11
GWM-1**	34	20.58	16.53	19.1
GWM-2**	35	DRY	DRY	DRY

* KA-3 DATA 2014-2020

** 2014 -2021

NAPIS REFERENCE DRAWINGS
NAPIS 42400-100, NAPIS 42400-106

REV.	DATE	DESCRIPTION	BY	CHK'D
		REVISIONS		

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DATE: 2/9/2022
SCALE: AS SHOWN
FILE: 697-SWMU1-XSEC202202

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SWMU-1 AND NAPIS CROSS SECTION

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FIGURE 2-2

REV.: -

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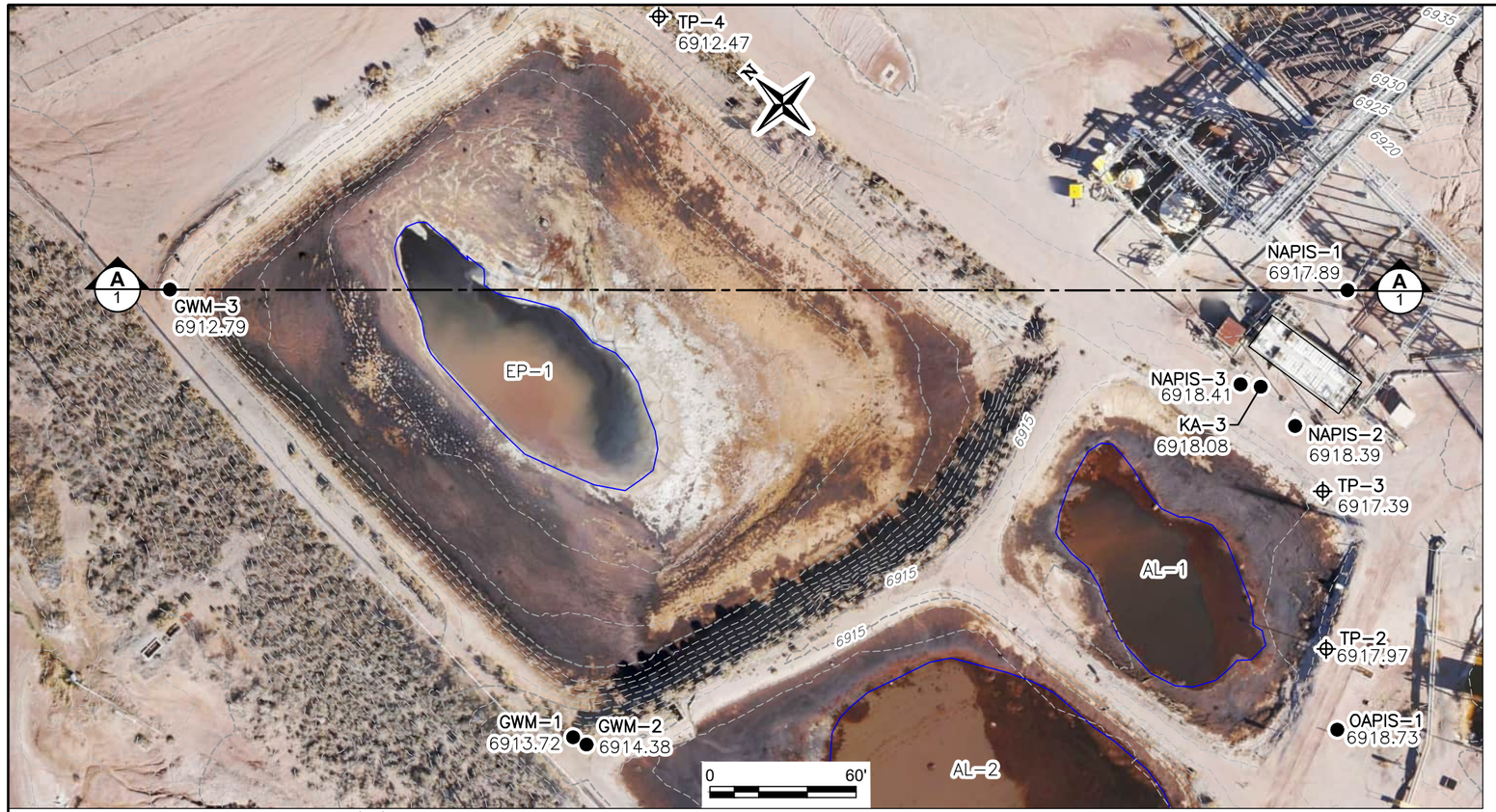


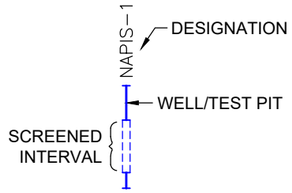
Image Cite: Trihydro Corporation Unmanned Aerial System (UAS) Photogrammetry Survey, December 2018

WATER LEVEL DATA

WELL	NO. OF DATA POINTS	DEPTH TO WATER, FT BGS			DATE
		MAXIMUM	MINIMUM	AVERAGE	
GWM-1	34	20.58	16.53	19.10	2014-2021
GWM-2	35	DRY	DRY	DRY	2014-2021
GWM-3	34	DRY	DRY	DRY	2014-2021
NAPIS-1	39	8.41	6.40	7.08	2011-2020
NAPIS-2	39	10.29	7.15	9.05	2011-2020
NAPIS-3	38	11.19	7.51	9.38	2011-2020
TP-4	1	-	-	8.2	2021

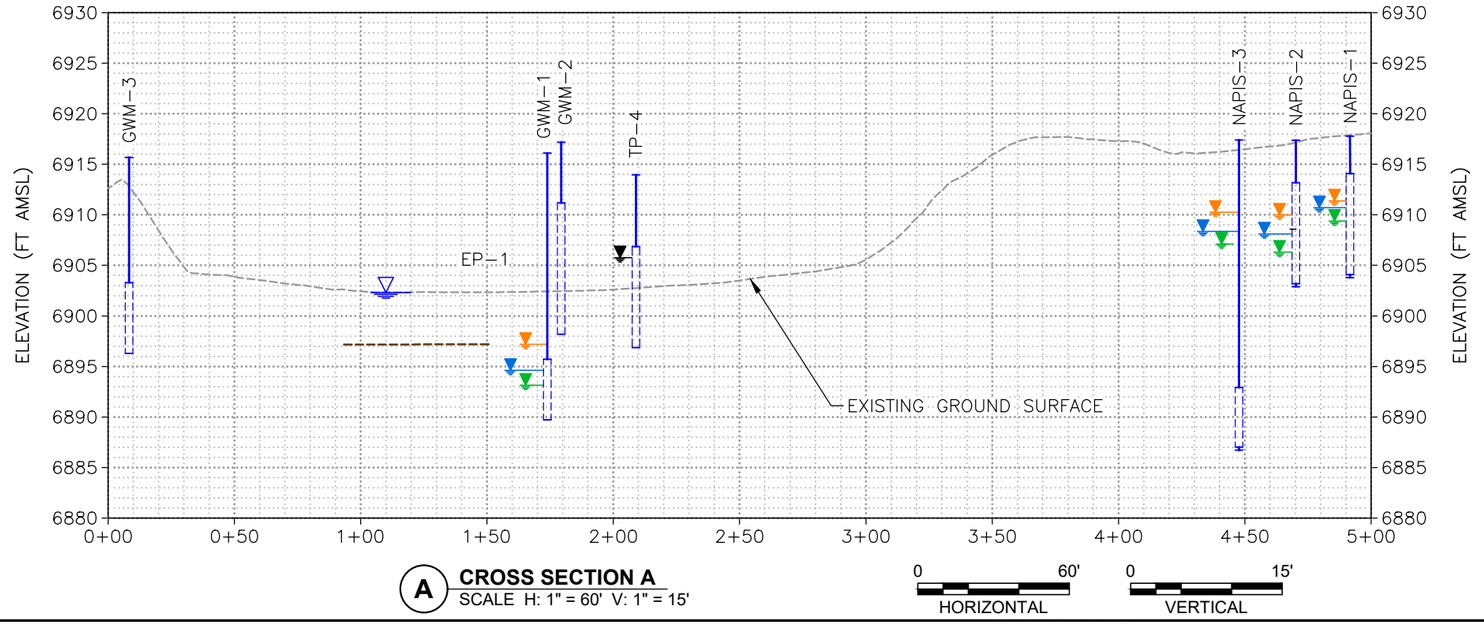
EXPLANATION

TP–4	TEST PIT AND DESIGNATION
NAPIS–1	MONITORING WELL AND DESIGNATION
6917.89	GROUND SURFACE ELEVATION (FT AMSL)
	POND WATER SURFACE
	WATER LEVEL (MAY 4, 2021 DATA)
	MINIMUM DTW (SEE DATE RANGE ABOVE)
	AVERAGE DTW (SEE DATE RANGE ABOVE)
	MAXIMUM DTW (SEE DATE RANGE ABOVE)
	APPROXIMATE DEPTH OF SLUDGE/TOP OF CLAY LINER
6600	SURFACE CONTOUR (1' INTERVAL)
	WATER BOUNDARY
DTW	DEPTH TO WATER
EP	EVAPORATION POND
FT BGS	FEET BELOW GROUND SURFACE
FT AMSL	FEET ABOVE MEAN SEA LEVEL
NAPIS	NEW API SEPARATOR



1 CROSS SECTION A PLAN VIEW

SCALE: 1" = 60'



A CROSS SECTION A

SCALE H: 1" = 60' V: 1" = 15'

0 60' HORIZONTAL

0 15' VERTICAL

REV.	DATE	DESCRIPTION	BY	CHK'D
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SWMU-1 EP-1 CROSS SECTION

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GALLUP, NEW MEXICO

FIGURE 2-3

REV: -

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EXPLANATION

MONITORING WELL LOCATION

TEST PIT LOCATION

NOTES:

AL - AERATION LAGOON
EP - EVAPORATION POND
SWMU - SOLID WASTE MANAGEMENT UNIT

N

0 50 '

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FIGURE 4-1

SWMU-1 TEST PIT LOCATIONS

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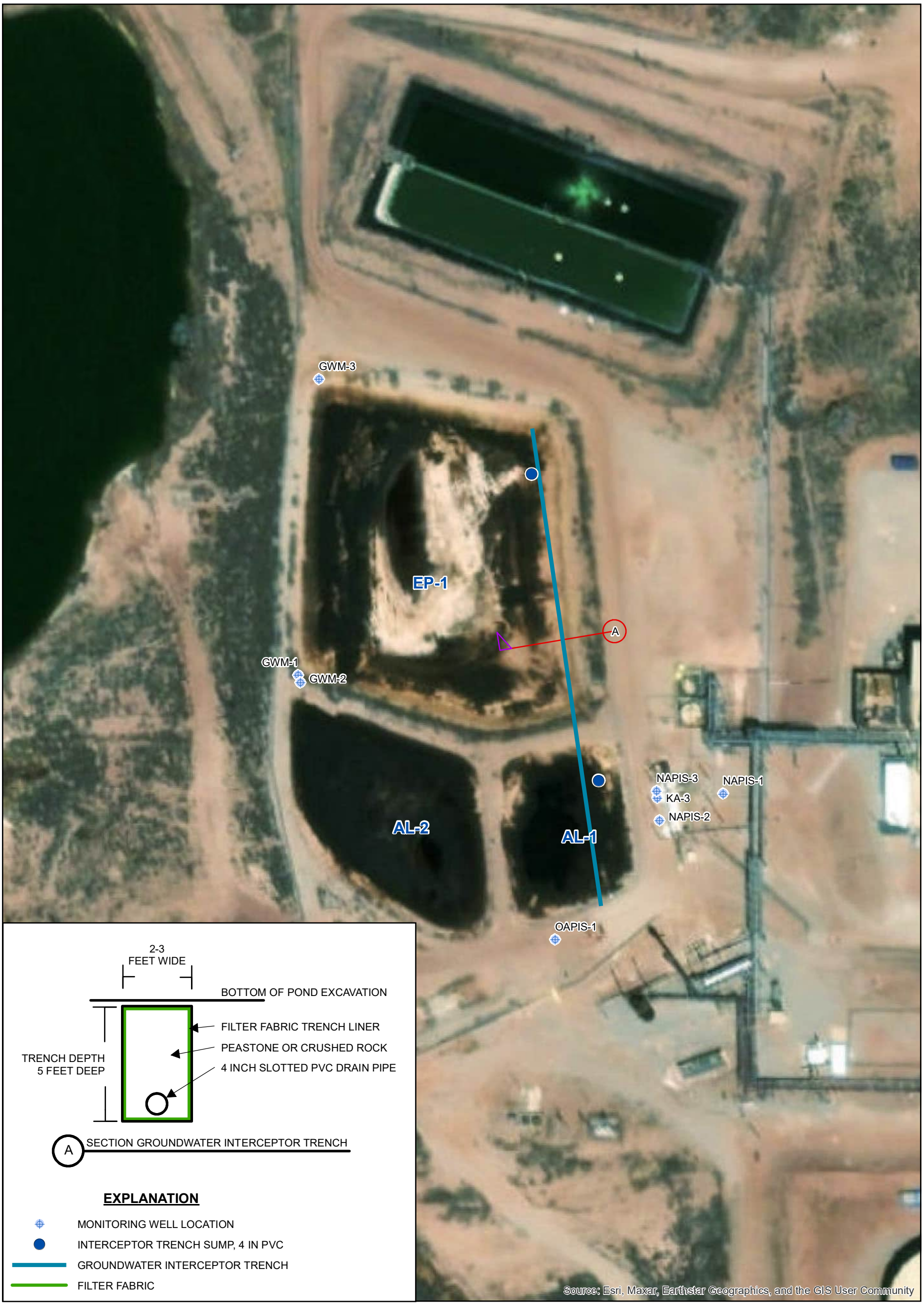
GALLUP, NEW MEXICO

Drawn By: KEJ	Checked By: CF	Scale: 1 " = 50 '	Date: 7/19/21	File: 4-1_SWMU1_TestPits_Fig4-1.mxd

M:\TO\NM\MARATHON\GIS\PROJECTS\GALLUP\REFINERY\SWMU1_AERATIONPASREPORTS\CONSHIPLAN2021\4-1_SWMU1_TESTPITS_FIG4-1.MXD



NOTES:

AL - AERATION LAGOON
EP - EVAPORATION POND
SWMU - SOLID WASTE MANAGEMENT UNIT

N

0 80'

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FIGURE 5-1

SWMU 1
PROPOSED GROUNDWATER INTERCEPTOR TRENCH

WESTERN REFINING SOUTHWEST, LLC
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GALLUP, NEW MEXICO

Drawn By: BR	Checked By: CF	Scale: 1 " = 80 '	Date: 2/15/23	File: 5-1_SWMU1_AL1_EP1_Trench_Fig5-1.mxd

\\TRIHYDRO.COM\CLIENTS\T\ON\MARATHON GIS\GALLUP\MAPPING\SWMU1 AERATIONBAS\REPORTS\CLOSUREPLAN\2023\5-1 SWMU1_AL1_EP1 TRENCH_FIG5-1.MXD

Preliminary Plan Set

WESTERN REFINING SOUTHWEST LLC, D/B/A
MARATHON GALLUP REFINERY
SWMU-1 CORRECTIVE MEASURES IMPLEMENTATION WORK PLAN

GALLUP, NEW MEXICO

FEBRUARY 2023

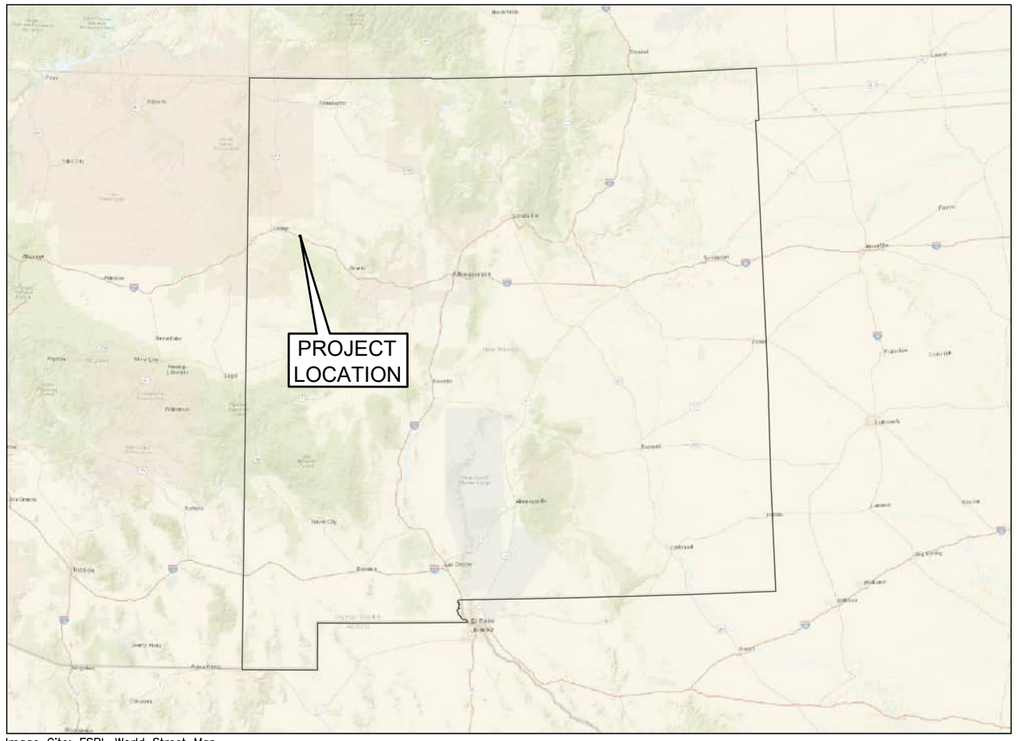

Image Cite: ESRI, World Street Map

1 NEW MEXICO STATE MAP
SCALE: 1" = 100 MILES

N

0 100 MILES

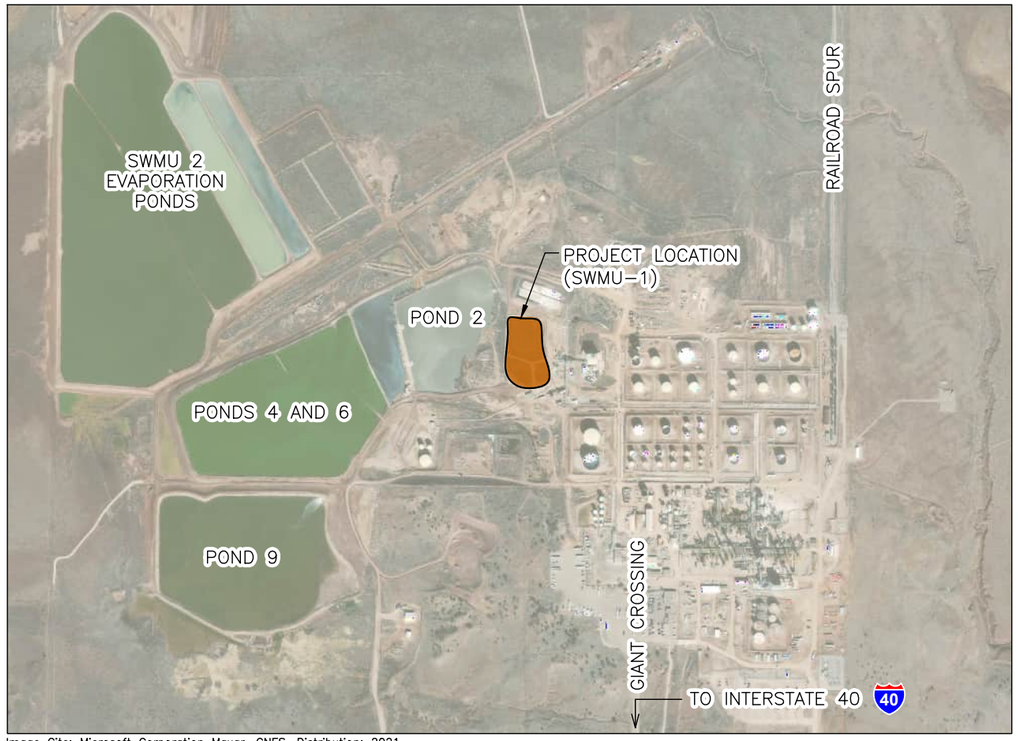

Image Cite: Microsoft Corporation Maxar, CNES, Distribution; 2021

2 PROJECT LOCATION MAP
SCALE: 1" = 1,000'

N

0 1,000'

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INDEX OF SHEETS		
SHEET NUMBER	SHEET TITLE	REVISION
TITLE	PROJECT LOCATION AND INDEX OF SHEETS	B
1	EXPLANATIONS AND NOTES	B
2	PROJECT MAP	B
3	GRADING PLAN	B
4	DETAILS	B

NOT FOR CONSTRUCTION

REV.	DATE	DESCRIPTION	BY	CHK'D
		REVISIONS		
B	2/20/2023	ISSUE FOR CMI WORK PLAN	SB	JP
A	9/8/2021	ISSUE FOR CLIENT REVIEW	SB	JP

DRAWN BY: SB
CHECKED BY: JP
DATE: 2/20/2023
SCALE: AS SHOWN
FILE: 697-G-SWMU1AB_TITLE

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PROJECT LOCATION AND INDEX OF SHEETS

SWMU-1 CMI WORK PLAN
MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO

TITLE

REV: B

M:\TON\MARATHON\CADD\GALLUP\SOLIDWASTEMANAGEMENTUNIT\SWMU-1_AERATIONBASIN\PLANSETS\697-G-SWMU1AB_TITLE

EXPLANATION

EXISTING

- 2% — APPROXIMATE GRADE
- 2:1 — APPROXIMATE SLOPE IN FORMAT H:V
- UNPAVED ROAD (POTENTIAL HAUL ROAD)
- TANK FARM AND IDLED REFINERY PROCESS AREA
- 6910 — SURFACE CONTOURS (1-FOOT INTERVAL)

PROPOSED

- 6910 — PROPOSED SURFACE CONTOURS (1-FOOT INTERVAL)
- POTENTIAL WASTE MANAGEMENT AREA
- SURFACE WATER INTERCEPTION BERM
- BORROW AREA
- EVAPORATION POND (2023)
- AERATION POND 1
- AERATION POND 2
- GROUNDWATER COLLECTION TRENCH

ABBREVIATIONS

SWMU	SOLID WASTE MANAGEMENT UNIT
WWTP	WASTE WATER TREATMENT PLANT
EP	EVAPORATION POND
AL	AERATION LAGOON

GENERAL NOTES:

DESCRIPTION:

THE PROJECT IS LOCATED APPROXIMATELY 18 MILES EAST OF GALLUP, NEW MEXICO WITHIN THE MARATHON GALLUP REFINERY. THE WORK CONSISTS OF REMOVAL OF POTENTIALLY IMPACTED SOILS STEMMING FROM PREVIOUSLY USED AERATION LAGOONS AND EVAPORATION POND OPERATIONS. FURTHERMORE, ONCE REMOVAL OCCURS, THE PONDS WILL BE CLOSED WITH CLEAN SOIL USING ENVIRONMENTAL BEST PRACTICES. THIS ACTIVITY INCLUDES PREPARATION OF A WASTE MANAGEMENT AREA, DEVELOPMENT OF THE BACKFILL BORROW SOURCE, AND COORDINATION OF MOVEMENT OF MATERIALS IN AND OUT OF THE SWMU 1 WORK AREA.

BORROW AREA:

THE REFINERY'S ONSITE BORROW PIT WILL BE UTILIZED TO SOURCE BACKFILL SOIL. SITE PREP MAY INCLUDE ANY OR ALL OF THE FOLLOWING ACTIVITIES:

1. IMPROVEMENT OF AREA ACCESS ROADS TO ENSURE EFFICIENT FLOW OF TRUCKS TO/FROM THE BORROW PIT.
2. EXCAVATION OF TEST PITS WITHIN THE BORROW PIT BANK TO VERIFY THE INITIAL QUANTITY AND QUALITY OF BACKFILL SOIL.
3. STORMWATER MANAGEMENT AS NEEDED TO REDUCE THE POTENTIAL FOR EXCESSIVE SEDIMENT TRANSPORT.
4. CONTRACTOR TO PROTECT EXISTING WELLS AND FACILITIES IN BORROW AREA.
5. FINAL SURFACE SHALL BE GRADED TO DRAIN WITH NO RUTS REMAINING.

STOCKPILE AREA:

1. THE AREA (IF NEEDED) WILL BE CONSTRUCTED ON RELATIVELY FLAT GROUND WITH ALL VEGETATION REMOVED. THE RESULTING SURFACE WILL BE ROLLED WITH A SMOOTH DRUM ROLLER TO PROVIDE A FIRM, UNYIELDING SURFACE. A SACRIFICIAL 20 MIL (0.020-INCH) HIGH DENSITY POLYETHYLENE (HDPE) LINER WILL BE LAID ON THE PREPARED SURFACE FOLLOWED BY A MINIMUM 1 FT LAYER OF CLEAN BORROW MATERIAL TO SERVE AS A WORKING SURFACE. BERMS WITH AN EQUIPMENT MOUNTABLE ENTRANCE WILL BE UTILIZED TO PREVENT MIGRATION OF STORMWATER RUN-ON / RUNOFF. DESIGN DETAILS FOR THE PAD ARE PROVIDED ON DRAWING SHEET 4. PONDED PRECIPITATION WOULD BE REMOVED VIA VACUUM TRUCK FOR TRANSPORT TO TANK 35 FOR TREATMENT THROUGH THE WWTP.
2. ONCE WASTE HAS BEEN STABILIZED, THE MATERIAL WILL BE TRANSFERRED TO THE STOCKPILE AREA. COMPLETE STOCKPILES WILL CONTAIN APPROXIMATELY 250 CUBIC YARDS OF MATERIAL. STOCKPILES WILL BE CONSTRUCTED TO ALLOW FOR SAMPLE COLLECTION FOR LABORATORY ANALYSES. THE FINAL STOCKPILE WILL BE UNALTERED AND PROTECTED FROM PRECIPITATION THROUGH USE OF PLASTIC SHEETING, TARPS, OR OTHER APPROVED METHOD. ONLY AFTER WRITTEN APPROVAL FROM THE TRIHYDRO SITE REPRESENTATIVE WILL OFF-SITE TRANSPORTATION BE ALLOWED.
3. A DECONTAMINATION (DECON) AREA WILL BE REQUIRED AT THE LAGOONS LOADOUT AREA TO PREVENT THE SPREAD OF EXCAVATED WASTE. WASTE LOADOUT (E.G., INTO ROLL-OFF CONTAINERS, OVER-THE-ROAD TRUCKS, OFF-ROAD TRUCKS) WILL BE PERFORMED IN SUCH A MANNER TO REDUCE THE AMOUNT OF WASTE CONTACTING THE EXTERIOR OF THE CONTAINER OR TRUCK BODY. LOOSE WASTE WILL BE REMOVED FROM CONTAINER EXTERIORS VIA BROOMS OR WITH WATER SPRAY IF NECESSARY. DECON PADS WILL BE GRADED SUCH THAT REMOVED WASTE IS CONVEYED INTO SUMPS FOR REMOVAL VIA BACKHOE FOR MANAGEMENT AND DISPOSAL.

WASTE EXCAVATION AND STABILIZATION:

1. WASTE EXCAVATION AND STABILIZATION WILL OCCUR WITHIN THE INDIVIDUAL LAGOONS.
2. SLUDGE WILL BE MIXED WITH ONSITE STABILIZATION MATERIAL (I.E. BORROW SOIL, SPENT CATALYST, RECOVERED BERM MATERIAL, ETC.) AS DIRECTED BY THE SITE REPRESENTATIVE TO PROVIDE A WORKABLE MATERIAL AT THE DESIGNATED DISPOSAL FACILITY.
3. DISPOSAL TEST LOADS MAY BE REQUIRED INITIALLY TO DETERMINE THE OPTIMAL STABILIZATION MATERIAL MIXING RATE TO MEET LANDFILL REQUIREMENTS.

CONSTRUCTION - GENERAL:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING STAGING AND STORAGE AREAS PRIOR TO THE START OF CONSTRUCTION.
2. CONTRACTOR IS RESPONSIBLE FOR KEEPING PUBLIC AND REFINERY ROADS CLEAN FROM MUD OR OTHER MATERIAL TRACKED ONTO SURROUNDING ROADS.
3. STORMWATER POLLUTION AND PREVENTION PLANS, AS WELL AS BEST MANAGEMENT PRACTICES AND MAINTENANCE, WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. MATERIAL STOCKPILES SHALL BE UNIFORMLY SHAPED AND PROTECTED FROM TRAFFIC.
5. ASPHALT AND CONCRETE FLATWORK THAT IS TO BE REMOVED IN CONNECTION WITH PROJECT WORK SHALL BE SAW-CUT TO PROVIDE A CLEAN EDGE. CONTRACTOR IS RESPONSIBLE FOR DISPOSING OF REMOVED ASPHALT AND CONCRETE.
6. PARK AND/OR STORE ALL EQUIPMENT, MATERIALS, AND SUPPLIES WITHIN REFINERY-DESIGNATED PARKING AREAS.
7. CONTRACTOR RESPONSIBLE FOR OBTAINING NEW MEXICO ENVIRONMENTAL DEPARTMENT STORMWATER PERMIT.
8. CONTRACTOR WILL NEED TO WORK WITHIN EXISTING EASEMENTS AND RIGHT-OF-WAYS, AND KEEP PROPERTY SECURE WHEN NOT WORKING ON SITE.
9. PROPOSED CONTOURS WILL BE FINALIZED IN "ISSUED FOR CONSTRUCTION" DRAWING SET.

GROUNDWATER INTERCEPTOR TRENCH:

1. TRENCH TO BE INSTALLED FOLLOWING COMPLETION OF SWMU-1 EXCAVATION AND CONFIRMATION TESTING.
2. FINAL GRADES TO BE DETERMINED FOLLOWING EXCAVATION OF WASTE. DESIGN OF TRENCH WATER EXTRACTION WILL DEPEND UPON ABILITY FOR GRAVITY FLOW OF COLLECTED WATER OR THE POSSIBLE NEED FOR PUMPING.
3. TRENCH ORIENTATIONS WILL GENERALLY FOLLOW THOSE SHOWN IN DRAWING SHEET 3

NOT FOR CONSTRUCTION

REV.	DATE	DESCRIPTION	BY	CHK'D
B	2/20/2023	ISSUE FOR CMI WORK PLAN	SB	JP
A	9/8/2021	ISSUE FOR CLIENT REVIEW	SB	JP

REVISIONS

DRAWN BY: SB
CHECKED BY: JP
DATE: 2/20/2023
SCALE: NONE
FILE: 697-G-SWMU1AB_NOTES

Trihydro Corporation
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307.745.7474 (F) 307.745.7729

EXPLANATIONS AND NOTES

SWMU-1 CMI WORK PLAN
MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO

SHEET 1 1 OF 4

REV: B

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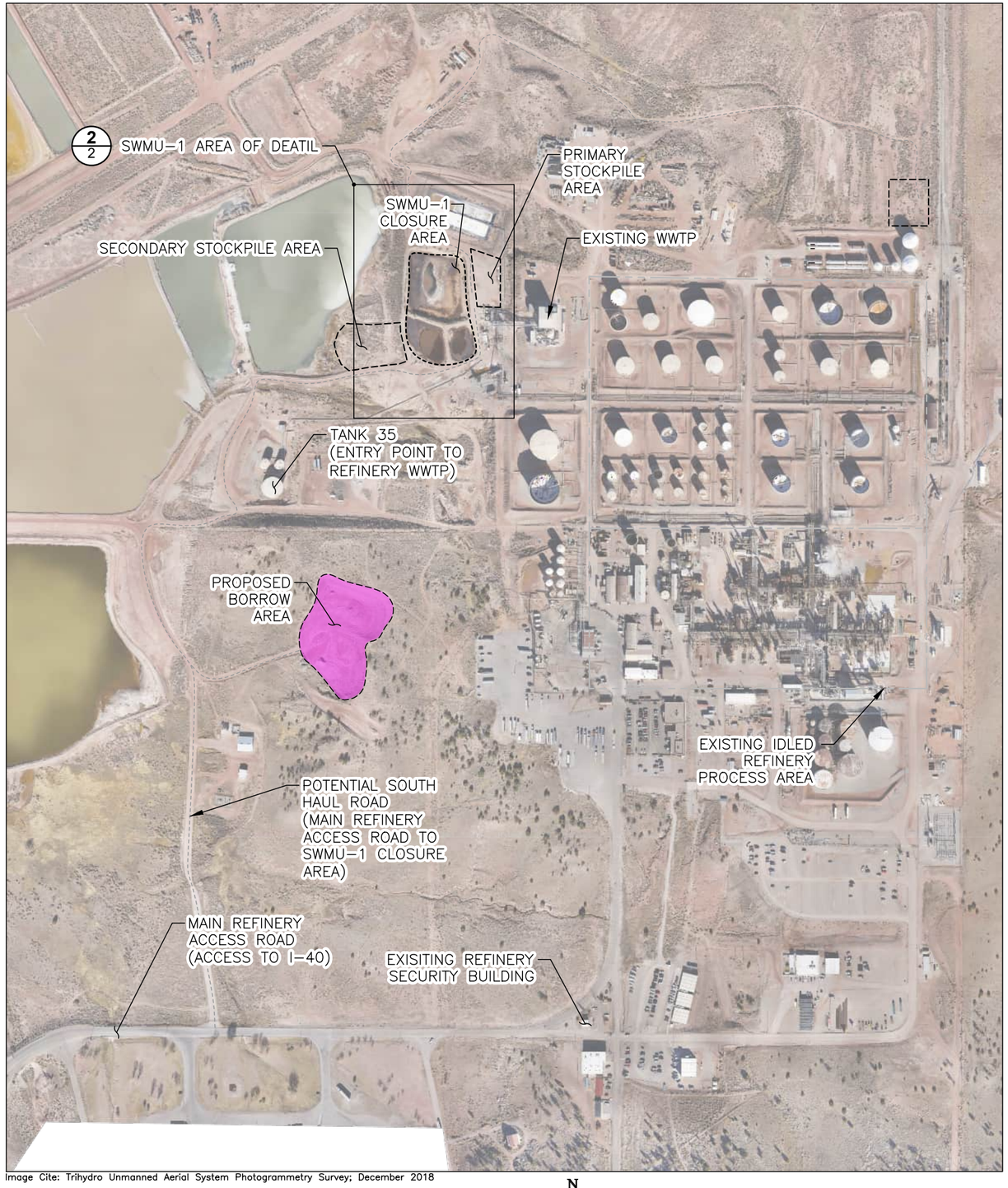
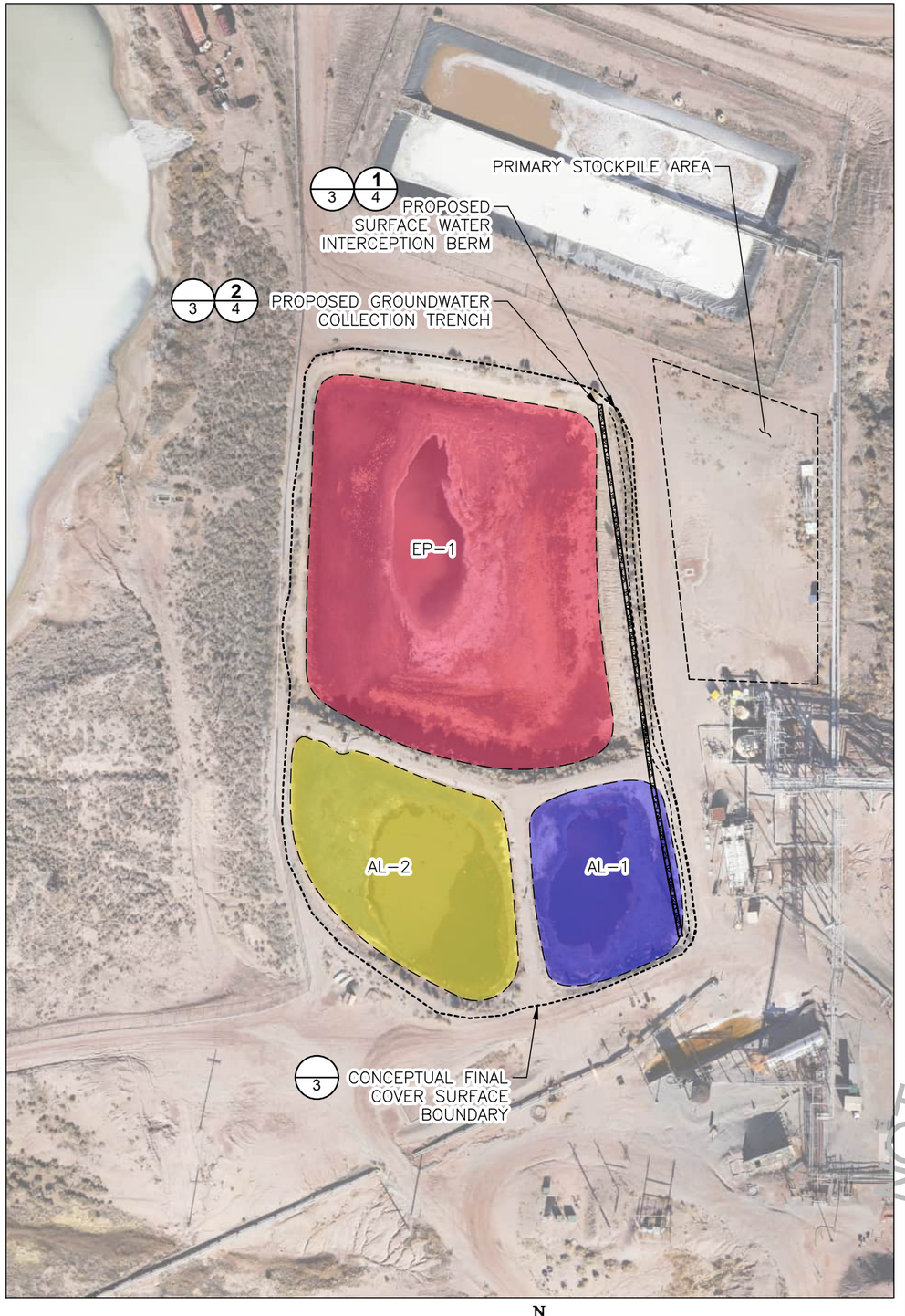


Image Cite: Trihydro Unmanned Aerial System Photogrammetry Survey; December 2018

1 SWMU-1 PROJECT MAP
SCALE: 1" = 500'

N

0 500'



2 SWMU-1 AREA OF DETAIL
SCALE: 1" = 100'

N

0 100'

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DRAWN BY: SB
CHECKED BY: JP
DATE: 2/20/2023
SCALE: AS SHOWN
FILE: 697-G-SWMU1AB_SITEPLAN

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
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PROJECT MAP
SWMU-1 CMI WORK PLAN
MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO

SHEET 2 2 OF 4

REV: B

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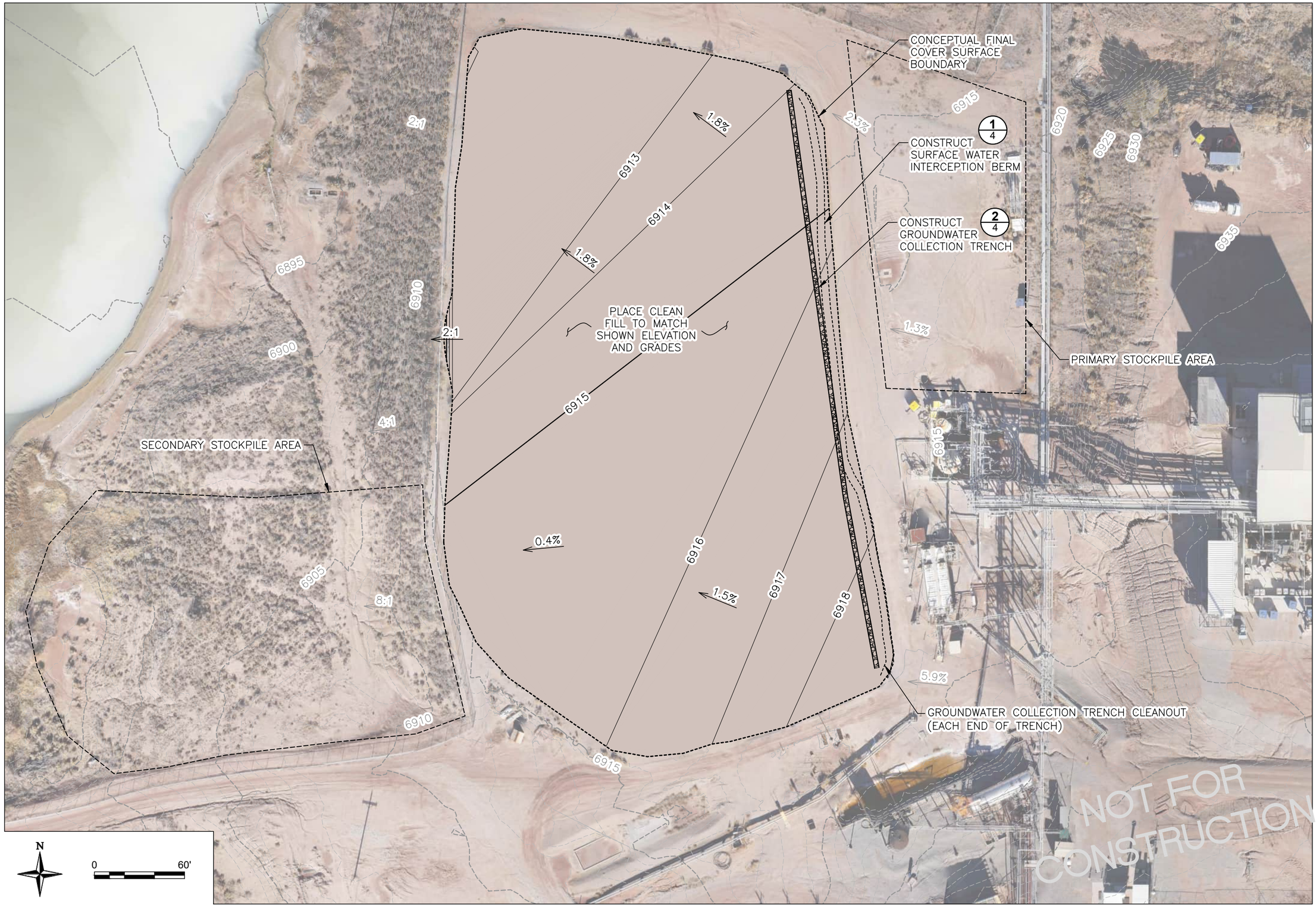

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DATE: 2/20/2023
SCALE: 1" = 60'
FILE: 697-G-SWMU1AB_GRADINGPLAN

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CONCEPTUAL GRADING PLAN

SWMU-1 CMI WORK PLAN
MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO

SHEET 3 OF 4

REV: B

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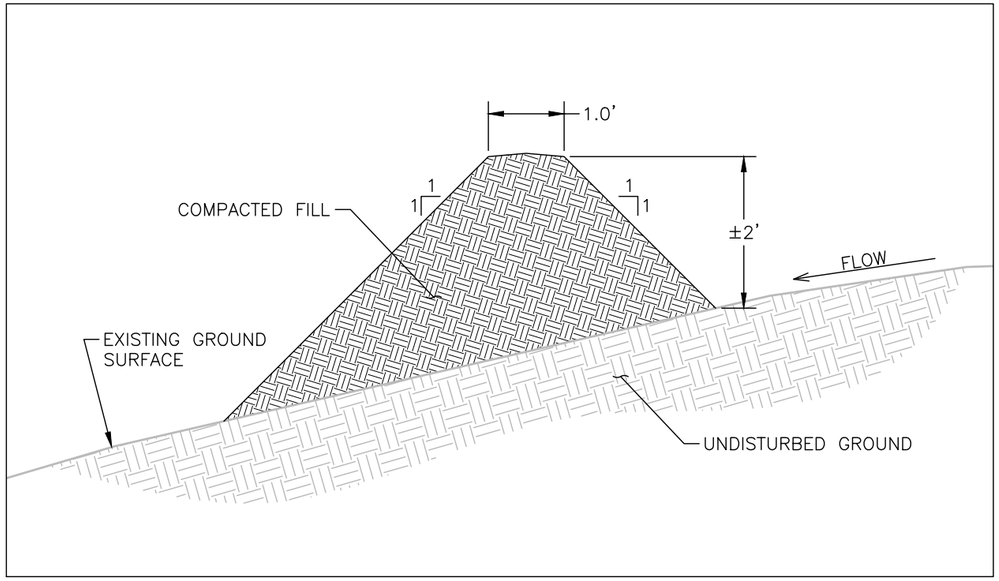
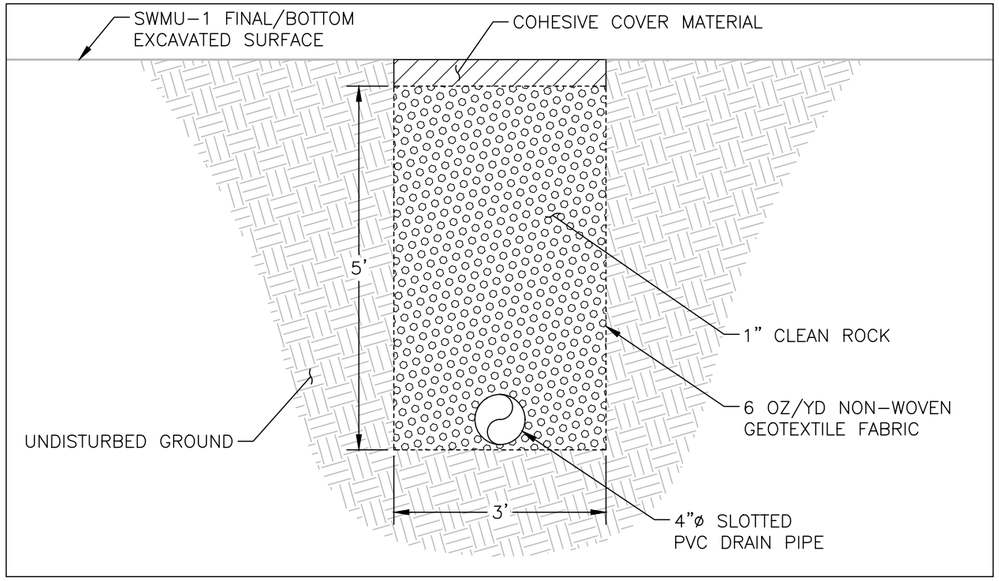
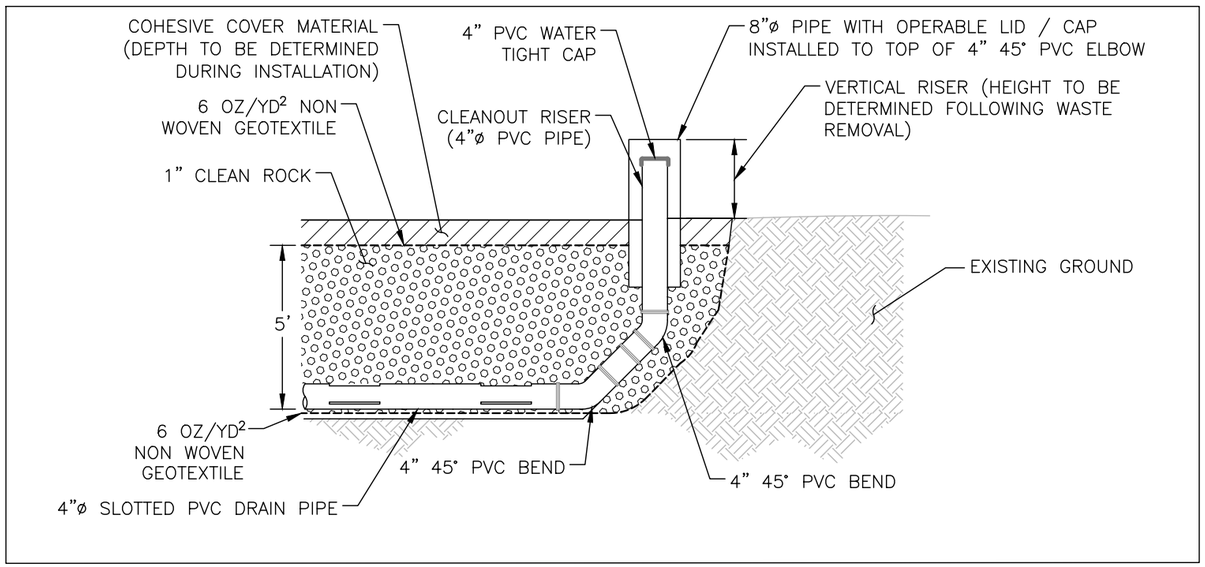


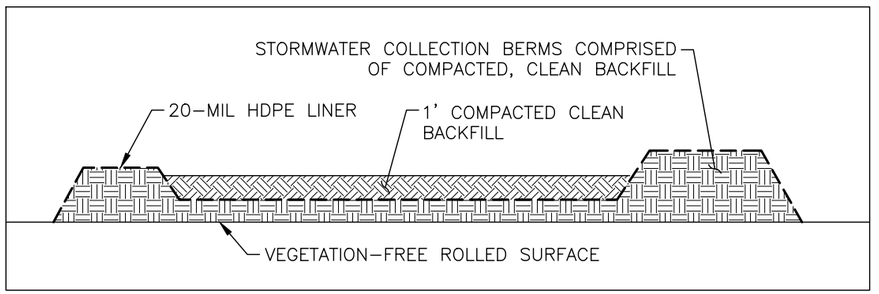
1 TYPICAL STORMWATER INTERCEPTOR BERM SECTION
SCALE: NONE



2 TYPICAL GROUNDWATER COLLECTION TRENCH SECTION
SCALE: NONE



3 CLEANOUT DETAIL
SCALE: NONE



4 STOCKPILE AREA SECTION
SCALE: NONE

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FILE: 697-G-SWMU1AB_DETAILS

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DETAILS

SWMU-1 CMI WORK PLAN
MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO

SHEET 4 4 OF 4

REV: B

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Tables

TABLE 1. SWMU 1 PETROLEUM HYDROCARBON ANALYTICAL RESULTS
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location Group Name	Location ID	Date Sampled	Gasoline Range Organics (mg/kg)		Diesel Range Organics (mg/kg)		Oil Range Organics (mg/kg)	
Evaporation Pond EP-1	SWMU 1-1 (2-4 ft)	10/05/12	**410**	c	**4700**	b,c	ND(5000)	
	SWMU 1-1 (10-12 ft)	10/05/12	ND(25)		820		ND(510)	
	SWMU 1-1 (13-14 ft)	10/05/12	ND(5)		55		ND(51)	
	SWMU 1-1	01/15/20	6.9		**84000**	a,c	**29000**	a,c
	SWMU 1-1 (0.5-3 ft)	01/15/20	39		**47000**	b,c	**8700**	b,c
	SWMU 1-1 (5 ft)	01/15/20	0.81		72		ND(47)	
	SWMU 1-2 (6-8 ft)	10/02/12	ND(5)		ND(9.9)		ND(49)	
	SWMU 1-2 (10-11 ft)	10/02/12	ND(5)		ND(10)		ND(52)	
	SWMU 1-2 (14-16 ft)	10/02/12	ND(5)		ND(9.9)		ND(50)	
	SWMU 1-2 (17-17.25 ft)	10/02/12	ND(5)		ND(9.6)		ND(48)	
	SWMU 1-2 (19.5-20 ft)	10/02/12	ND(5)		ND(10)		ND(50)	
	SWMU 1-2 Dup	01/15/20	8.2		**130000**	a,c	**42000**	a,c
	SWMU 1-2	01/15/20	7.7		**150000**	a,c	**50000**	a,c
	SWMU 1-2 (2-2.5 ft)	01/15/20	44		**68000**	b,c	**9400**	b,c
	SWMU 1-2 (3-3.5 ft)	01/15/20	ND(13)		**1700**	c	280	
	SWMU 1-3 (2-4 ft)	10/02/12	ND(5)		ND(10)		ND(51)	
	SWMU 1-3 (10-11 ft)	10/02/12	ND(5)		ND(9.7)		ND(48)	
	SWMU 1-3 (11-11.25 ft)	10/02/12	ND(5)		ND(10)		ND(50)	
	SWMU 1-3 (18.5-19.5 ft)	10/02/12	ND(5)		ND(9.7)		ND(49)	
	SWMU 1-3 (19.5-20 ft)	10/02/12	ND(5)		ND(10)		ND(50)	
	SWMU 1-3 (0-0.5 ft)	01/14/20	ND(17)		**29000**	a,c	**15000**	a,c
	SWMU 1-3 (0.5-3 ft)	01/14/20	78		**46000**	b,c	**7200**	b,c
	SWMU 1-3 (3 ft)	01/14/20	23		**1700**	c	370	
	SWMU 1-4 (8-10 ft)	10/03/12	ND(5)		ND(9.9)		ND(50)	
	SWMU 1-4 (10-12 ft)	10/03/12	ND(5)		ND(16)		ND(82)	
	SWMU 1-4 (17-18 ft)	10/03/12	13		ND(10)		ND(51)	
	SWMU 1-4 (23-24 ft)	10/03/12	ND(5)		ND(9.7)		ND(48)	
	SWMU 1-4	01/14/20	40		**140000**	a,c	**34000**	a,c
	SWMU 1-4 (3 ft)	01/14/20	86		**42000**	b,c	**6400**	b,c
	SWMU 1-4 (3-3.5 ft)	01/14/20	13		810		160	
	SWMU 1-11 (berm) (1.5 ft)	01/13/20	ND(3.5)		140		230	
	SWMU 1-11 (berm) (2.5 ft)	01/13/20	ND(3.4)		520		650	
	SWMU 1-11 (berm) (5 ft)	01/13/20	ND(3.5)		24		ND(50)	
	SWMU 1-11 (berm) (7.5 ft)	01/13/20	8.9		**4900**	b,c	**3200**	c
	SWMU 1-11 (toe)	01/15/20	91		**92000**	a,c	**52000**	a,c
	SWMU 1-11 (toe) (2.5 ft)	01/15/20	71		**8100**	b,c	**3300**	c
	SWMU 1-12 (berm) (1.5 ft)	01/13/20	ND(3.1)		32		110	
	SWMU 1-12 (berm) (2.5 ft)	01/13/20	ND(3.4)		4.2		ND(45)	
	SWMU 1-12 (berm) (5 ft)	01/13/20	ND(3)		110		110	
[a] Industrial NMED SSL			500		3,000		3,800	
[b] Construction NMED SSL			500		3,000		5,000	
[c] Residential NMED SSL			100		1,000		1,000	

Notes:
NMED SSL's - New Mexico Environmental Department Industrial, Construction, and Residential Soil Screening Levels, November 2022
AL - Aeration Lagoon
EP - Evaporation Pond
TCLP - toxicity characteristic leaching procedure
ft - feet mg/kg - milligrams per kilogram
NA - Not Applicable ND - Not Detected (Reporting Limit)
SWMU - Solid Waste Management Unit
Dup - Duplicate Sample
(toe) samples composited in the field (berm) samples taken along the berm
Samples without location depths were taken from the surface.
Bolded values exceed the standard.

TABLE 1. SWMU 1 PETROLEUM HYDROCARBON ANALYTICAL RESULTS
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location Group Name	Location ID	Date Sampled	Gasoline Range Organics (mg/kg)		Diesel Range Organics (mg/kg)		Oil Range Organics (mg/kg)	
Evaporation Pond EP-1	SWMU 1-12 (berm) (7.5 ft)	01/13/20	6.3		**7000**	b,c	**4600**	c
	SWMU 1-12 (toe)	01/15/20	6.5		**110000**	a,c	**51000**	a,c
	SWMU 1-12 (toe) (2.5 ft)	01/15/20	ND(2.5)		150		48	
	SWMU 1-12 (toe) (3 ft)	01/15/20	ND(2.4)		190		110	
	SWMU 1-13 (berm) (5 ft) Dup	01/13/20	ND(4.1)		5.9		ND(49)	
	SWMU 1-13 (berm) (1.5 ft)	01/13/20	ND(3.8)		47		110	
	SWMU 1-13 (berm) (2.5 ft)	01/13/20	ND(4.3)		16		ND(49)	
	SWMU 1-13 (berm) (5 ft)	01/13/20	ND(3.5)		6.3		ND(49)	
	SWMU 1-13 (berm) (7.5 ft)	01/13/20	ND(3.9)		25		ND(46)	
	SWMU 1-13 (berm) (9 ft)	01/13/20	ND(3.9)		6.3		ND(48)	
	SWMU 1-13 (toe) Dup	01/14/20	1.9		**26000**	a,c	**18000**	a,c
	SWMU 1-13 (toe) (3 ft)	01/14/20	ND(15)		24		ND(46)	
	SWMU 1-13 (toe)	01/14/20	ND(18)		**37000**	a,c	**21000**	a,c
	SWMU 1-14 (berm) (5 ft) Dup	01/14/20	ND(3.4)		18		ND(48)	
	SWMU 1-14 (berm) (1.5 ft)	01/14/20	ND(4.1)		7		ND(50)	
	SWMU 1-14 (berm) (2.5 ft)	01/14/20	ND(4)		12		ND(48)	
	SWMU 1-14 (berm) (5 ft)	01/14/20	ND(3.9)		16		ND(48)	
	SWMU 1-14 (berm) (7.5 ft)	01/14/20	ND(3)		**2800**	c	**1100**	c
	SWMU 1-14 (toe)	01/14/20	17		**89000**	a,c	**28000**	a,c
	SWMU 1-14 (toe) (2.5 ft)	01/14/20	82		**59000**	b,c	**12000**	b,c
	SWMU 1-14 (toe) (3 ft)	01/14/20	4.4		120		ND(44)	
Former Aeration Lagoon AL-1	SWMU 1-8 (4-6 ft)	10/05/12	ND(5)		ND(10)		ND(52)	
	SWMU 1-8 (10-12 ft)	10/05/12	ND(5)		100		280	
	SWMU 1-8 (12-14 ft)	10/05/12	ND(5)		53		ND(50)	
	SWMU 1-8 (16-18 ft)	10/05/12	ND(5)		ND(9.9)		ND(50)	
	SWMU 1-8 (19-20 ft)	10/05/12	ND(5)		ND(10)		ND(50)	
	SWMU 1-8	01/16/20	52		**49000**	a,c	**11000**	a,c
	SWMU 1-8 (2.5 ft)	01/16/20	**150**	c	**7800**	b,c	**1100**	c
	SWMU 1-8 (5-5.5 ft)	01/16/20	10		56		ND(47)	
	SWMU 1-9 (0-0.5 ft)	10/15/12	ND(5)		ND(9.9)		280	
	SWMU 1-9 (1.5-2 ft)	10/15/12	ND(5)		ND(10)		ND(50)	
	SWMU 1-9	01/16/20	**370**	c	**150000**	a,c	**51000**	a,c
	SWMU 1-9 (4.5 ft)	01/16/20	**240**	c	**65000**	b,c	**8600**	b,c
	SWMU 1-9 (5.5-6 ft)	01/16/20	12		110		ND(48)	
	SWMU 1-10 (0-0.5 ft)	10/15/12	ND(5)		45		230	
	SWMU 1-10 (1.5-2 ft)	10/15/12	ND(5)		42		210	
	SWMU 1-10	01/16/20	**450**	c	**110000**	a,c	**29000**	a,c
	SWMU 1-10 (4-4.5 ft)	01/16/20	**600**	b,c	**33000**	b,c	**4800**	c
	SWMU 1-10 (4.5-5 ft)	01/16/20	35		350		67	
[a] Industrial NMED SSL			500		3,000		3,800	
[b] Construction NMED SSL			500		3,000		5,000	
[c] Residential NMED SSL			100		1,000		1,000	

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	SWMU 1-19 (berm) (2.5 ft)	01/13/20	5		**6300**	b,c	**3100**	c
	SWMU 1-19 (toe) Dup	01/16/20	4.7		**73000**	a,c	**38000**	a,c
	SWMU 1-19 (toe)	01/16/20	3.4		**81000**	a,c	**43000**	a,c
	SWMU 1-19 (toe) (0.5-6 ft)	01/16/20	**250**	c	**22000**	b,c	**4500**	c
	SWMU 1-19 (toe) (6-6.5 ft)	01/16/20	20		**2800**	c	730	
	SWMU 1-20 (berm) (2.5 ft)	01/14/20	0.8		560		640	
	SWMU 1-20 (toe) (1.5 ft)	01/14/20	ND(16)		300		450	
	SWMU 1-20 (toe) (5 ft) Dup	01/15/20	**180**	c	**9300**	b,c	**2800**	c
	SWMU 1-20 (toe)	01/15/20	18		**33000**	a,c	**32000**	a,c
	SWMU 1-20 (toe) (0.5-3 ft)	01/15/20	**200**	c	**17000**	b,c	**2900**	c
	SWMU 1-20 (toe) (5 ft)	01/15/20	**220**	c	**6400**	b,c	**1500**	c
	SWMU 1-21 (berm) (1.5 ft)	01/14/20	0.89		340		600	
	SWMU 1-21 (toe)	01/14/20	42		**48000**	a,c	**18000**	a,c
	SWMU 1-21 (toe) (2.5 ft)	01/14/20	47		**2800**	c	860	
	SWMU 1-21 (toe) (5 ft)	01/14/20	3.3		950		620	
	SWMU 1-22 (berm) (1.5 ft)	01/14/20	ND(4.1)		82		140	
	SWMU 1-22 (berm) (2.5 ft)	01/14/20	12		**2100**	c	710	
	SWMU 1-22 (berm) (5 ft)	01/14/20	**120**	c	**140000**	b,c	**27000**	b,c
	SWMU 1-22 (toe)	01/16/20	**140**	c	**89000**	a,c	**36000**	a,c
	SWMU 1-22 (toe) (2.5 ft)	01/16/20	**410**	c	**21000**	b,c	**4400**	c
	SWMU 1-22 (toe) (3.5-4 ft)	01/16/20	ND(16)		530		110	
Former Aeration Lagoon AL-2	SWMU 1-5 (10-12 ft)	10/03/12	ND(5)		ND(9.8)		ND(49)	
	SWMU 1-5 (14-16 ft)	10/03/12	ND(5)		ND(9.6)		ND(48)	
	SWMU 1-5 (16-18 ft)	10/03/12	ND(5)		ND(10)		ND(50)	
	SWMU 1-5 (24-25 ft)	10/03/12	ND(5)		ND(10)		ND(50)	
	SWMU 1-5 (26-27 ft)	10/03/12	ND(5)		ND(12)		ND(59)	
	SWMU 1-5 (27-28 ft)	10/03/12	ND(5)		ND(10)		ND(50)	
	SWMU 1-5	01/17/20	**110**	c	**130000**	a,c	**42000**	a,c
	SWMU 1-5 (2.5-5 ft)	01/17/20	48		**99000**	b,c	**21000**	b,c
	SWMU 1-5 (5.5-6 ft)	01/17/20	12		**1200**	c	310	
	SWMU 1-6 (2-4 ft)	10/04/12	ND(5)		ND(9.9)		ND(49)	
	SWMU 1-6 (4-6 ft)	10/04/12	ND(5)		ND(9.8)		ND(49)	
	SWMU 1-6 (7.5-8 ft)	10/04/12	ND(5)		ND(10)		ND(50)	
	SWMU 1-6 (10-11 ft)	10/04/12	ND(5)		ND(10)		ND(50)	
	SWMU 1-6 (11-12 ft)	10/04/12	ND(5)		ND(10)		ND(50)	
	SWMU 1-6 (0-5.5 ft)	01/17/20	55		**19000**	b,c	**2500**	c
	SWMU 1-6 (5.5-6 ft)	01/17/20	7.7		25		ND(42)	
	SWMU 1-7 (12-14 ft)	10/04/12	ND(5)		ND(10)		ND(50)	
[a] Industrial NMED SSL			500		3,000		3,800	
[b] Construction NMED SSL			500		3,000		5,000	
[c] Residential NMED SSL			100		1,000		1,000	

Notes:
NMED SSL's - New Mexico Environmental Department Industrial, Construction, and Residential Soil Screening Levels, November 2022
AL - Aeration Lagoon
EP - Evaporation Pond
TCLP - toxicity characteristic leaching procedure
ft - feet mg/kg - milligrams per kilogram
NA - Not Applicable ND - Not Detected (Reporting Limit)
SWMU - Solid Waste Management Unit
Dup - Duplicate Sample
(toe) samples composited in the field (berm) samples taken along the berm
Samples without location depths were taken from the surface.
Bolded values exceed the standard.

TABLE 1. SWMU 1 PETROLEUM HYDROCARBON ANALYTICAL RESULTS
WESTERN REFINING SOUTHWEST LLC, MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location Group Name	Location ID	Date Sampled	Gasoline Range Organics (mg/kg)		Diesel Range Organics (mg/kg)		Oil Range Organics (mg/kg)	
Former Aeration Lagoon AL-2	SWMU 1-7 (14-16 ft)	10/04/12	ND(5)		ND(9.8)		ND(49)	
	SWMU 1-7 (16-18 ft)	10/04/12	ND(5)		ND(9.9)		ND(49)	
	SWMU 1-7 Dup	01/17/20	30		**87000**	a,c	**38000**	a,c
	SWMU 1-7	01/17/20	32		**61000**	a,c	**29000**	a,c
	SWMU 1-7 (2.5 ft)	01/17/20	74		**66000**	b,c	**13000**	b,c
	SWMU 1-7 (4-5 ft)	01/17/20	17		**3800**	b,c	**1200**	c
	SWMU 1-15 (berm) (1.5 ft)	01/13/20	ND(4.4)		4.7		ND(46)	
	SWMU 1-15 (berm) (2.5 ft)	01/13/20	5.4		**20000**	b,c	**5500**	b,c
	SWMU 1-15 (toe) Dup	01/16/20	55		**170000**	a,c	**67000**	a,c
	SWMU 1-15 (toe)	01/16/20	42		**160000**	a,c	**68000**	a,c
	SWMU 1-15 (toe) (3 ft)	01/16/20	32		**18000**	b,c	**4700**	c
	SWMU 1-15 (toe) (4-5 ft)	01/16/20	78		**56000**	b,c	**14000**	b,c
	SWMU 1-16 (berm) (1.5 ft) Dup	01/13/20	ND(4.7)		310		160	
	SWMU 1-16 (berm) (1.5 ft)	01/13/20	ND(4.8)		230		140	
	SWMU 1-16 (berm) (2.5 ft)	01/13/20	20		**32000**	b,c	**8200**	b,c
	SWMU 1-16 (toe) Dup	01/16/20	28		**130000**	a,c	**69000**	a,c
	SWMU 1-16 (toe)	01/16/20	25		**130000**	a,c	**72000**	a,c
	SWMU 1-16 (toe) (2.5 ft)	01/16/20	100		**69000**	b,c	**14000**	b,c
	SWMU 1-16 (toe) (4-4.5 ft)	01/16/20	14		**16000**	b,c	**5000**	c
	SWMU 1-17 (berm) (1.5 ft)	01/13/20	ND(4.5)		290		230	
	SWMU 1-17 (berm) (2.5 ft)	01/13/20	ND(2.7)		130		49	
	SWMU 1-17 (toe)	01/16/20	ND(23)		**62000**	a,c	**48000**	a,c
	SWMU 1-17 (toe) (2.5 ft)	01/16/20	14		**14000**	b,c	**4200**	c
	SWMU 1-17 (toe) (4.5-5 ft)	01/16/20	0.95		590		240	
	SWMU 1-18 (berm) (1.5 ft)	01/13/20	ND(4.1)		35		ND(47)	
	SWMU 1-18 (berm) (2.5 ft)	01/13/20	ND(4.8)		280		200	
	SWMU 1-18 (toe)	01/16/20	4.8		**96000**	a,c	**31000**	a,c
	SWMU 1-18 (toe) (2.5 ft)	01/16/20	45		**23000**	b,c	**8300**	b,c
	SWMU 1-18 (toe) (5 ft)	01/16/20	4.1		520		150	

[a]	Industrial NMED SSL	500	3,000	3,800
[b]	Construction NMED SSL	500	3,000	5,000
[c]	Residential NMED SSL	100	1,000	1,000

Notes:
NMED SSL's - New Mexico Environmental Department Industrial, Construction, and Residential Soil Screening Levels, November 2022
AL - Aeration Lagoon
EP - Evaporation Pond
TCLP - toxicity characteristic leaching procedure
ft - feet mg/kg - milligrams per kilogram
NA - Not Applicable ND - Not Detected (Reporting Limit)
SWMU - Solid Waste Management Unit
Dup - Duplicate Sample
(toe) samples composited in the field (berm) samples taken along the berm
Samples without location depths were taken from the surface.
Bolded values exceed the standard.

TABLE 2. TCLP ANALYTE LIST - SWMU 1
WESTERN REFINING SOUTHWEST, LLC
D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Analyte	Max Detect (mg/L)	Detect Rate	TCLP Exceedance Rate	Sample Count	Detect Count	Location of Maximum Detect	Number of CFR TCLP Exceedances	USEPA CFR TCLP Screening Level[1] (mg/L)
1,2-Dichloroethane (EDC), TCLP	ND	ND	ND	1	0	ND	0	0.5
1,4-Dichlorobenzene, TCLP	ND	ND	ND	1	0	ND	0	7.5
2-Butanone, TCLP	ND	ND	ND	1	0	ND	0	NA
Antimony, TCLP	ND	ND	ND	6	0	ND	0	NA
Arsenic, TCLP	0.039	100.0%	0.00%	6	6	AL2-SL-1	0	5
Barium, TCLP	1.09	16.7%	0.00%	6	1	AL1-SL-1	0	100
Benzene, TCLP	0.27	66.7%	0.00%	9	6	SWMU 1-10 (4-4.5 ft)	0	0.5
Beryllium, TCLP	ND	ND	ND	6	0	ND	0	NA
Cadmium, TCLP	ND	ND	ND	6	0	ND	0	1
Carbon Disulfide, TCLP	0.282	100.0%	0.00%	6	6	AL2-SL-3	0	NA
Carbon Tetrachloride, TCLP	ND	ND	ND	1	0	ND	0	0.5
Chlorobenzene, TCLP	ND	ND	ND	1	0	ND	0	100
Chloroform, TCLP	ND	ND	ND	1	0	ND	0	6
Chromium, TCLP	0.0154	66.7%	0.00%	6	4	AL1-SL-3	0	5
Cobalt, TCLP	ND	ND	ND	6	0	ND	0	NA
Lead, TCLP	0.0178	3.2%	0.00%	63	2	AL2-SL-3	0	5
Mercury, TCLP	0.0015	9.5%	0.00%	63	6	SWMU 1-22 (berm) (2.5 ft), SWMU 1-16 (berm) (1.5 ft)	0	0.2
Nickel, TCLP	0.071	66.7%	0.00%	6	4	AL1-SL-1	0	NA
Selenium, TCLP	ND	ND	ND	6	0	ND	0	1
Silver, TCLP	ND	ND	ND	6	0	ND	0	5
Tetrachloroethene (PCE), TCLP	ND	ND	ND	1	0	ND	0	0.7
Thallium, TCLP	ND	ND	ND	6	0	ND	0	NA
Trichloroethene (TCE), TCLP	ND	ND	ND	1	0	ND	0	0.5
Vanadium, TCLP	0.0299	16.7%	0.00%	6	1	AL1-SL-1	0	NA
Vinyl chloride, TCLP	ND	ND	ND	1	0	ND	0	0.2
Zinc, TCLP	2.1	100.0%	0.00%	6	6	AL1-SL-1	0	NA

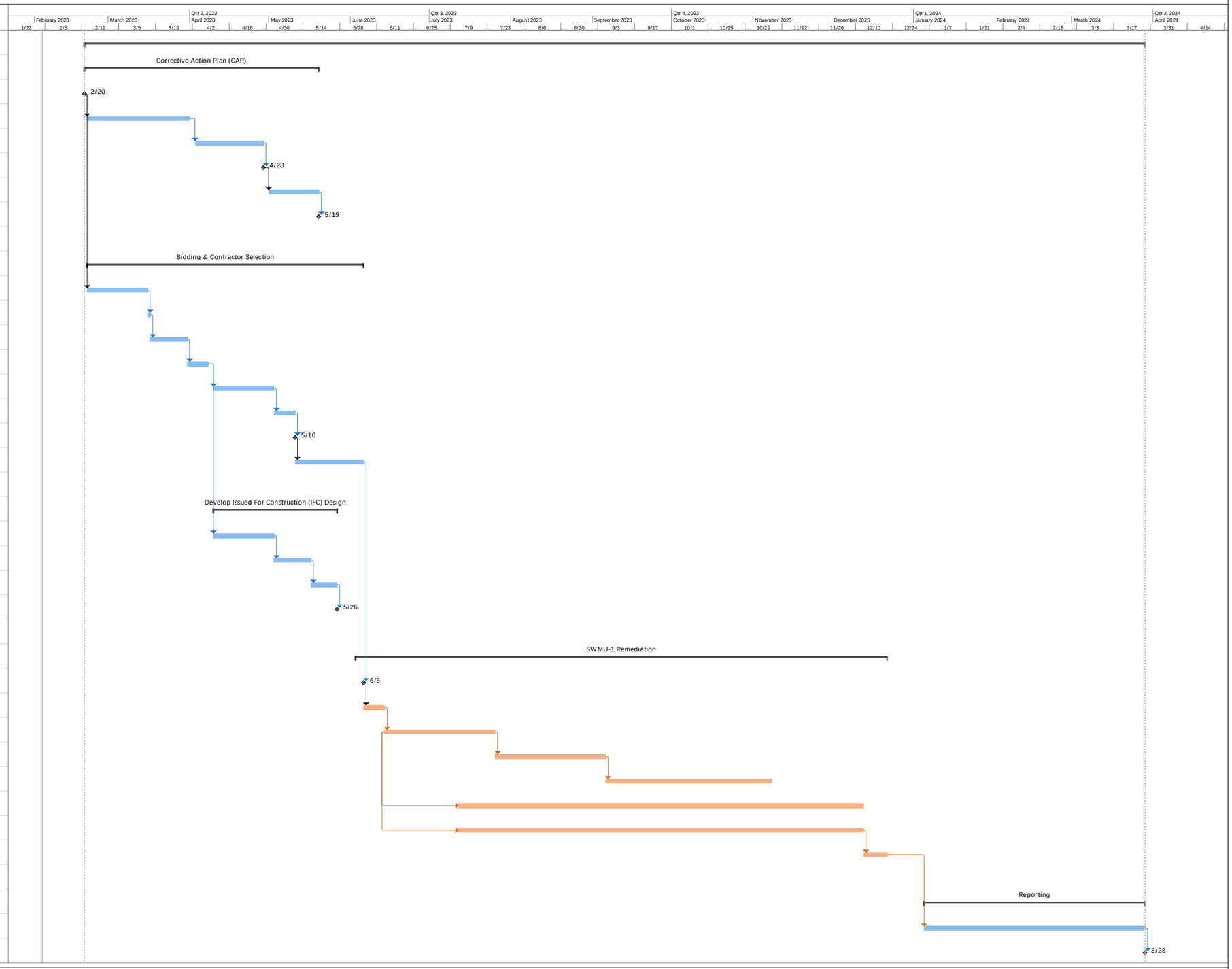
Notes:
AL - Aeration Lagoon
CFR - Code of Federal Regulations
mg/L - milligram per liter
NA - Not Applicable
ND - Not Detected
SWMU - Solid Waste Management Unit
TCLP - Toxicity Characteristic Leaching Procedure
USEPA - United States Environmental Protection Agency

References
[1] CFR Title 40 part 261 subpart C

Appendix A – SWMU-1 CMIWP Timeline

MARATHON GALLUP REFINERY
SWMU-1 REMEDIATION IMPLEMENTATION SCHEDULE

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
1		SWMU-1 Remediation	289 days	Mon 2/20/23	Thu 3/28/24	
2		Corrective Action Plan (CAP)	65 days	Mon 2/20/23	Fri 5/19/23	
3		Submit CAP to NMED	0 days	Mon 2/20/23	Mon 2/20/23	
4		NMED Review	29 days	Tue 2/21/23	Fri 3/31/23	3FS+1 day
5		Revise CAP	20 days	Mon 4/3/23	Fri 4/28/23	4
6		Submit Revised CAP to NMED	0 days	Fri 4/28/23	Fri 4/28/23	5
7		NMED Review of Revised CAP	15 days	Mon 5/1/23	Fri 5/19/23	6
8		CAP Approval	0 days	Fri 5/19/23	Fri 5/19/23	7
9						
10		Bidding & Contractor Selection	75 days	Tue 2/21/23	Mon 6/5/23	
11		Bid Document Prep	17 days	Tue 2/21/23	Wed 3/15/23	3FS+1 day
12		Bid Walk	1 day	Thu 3/16/23	Thu 3/16/23	11
13		Questions Due	10 days	Fri 3/17/23	Thu 3/30/23	12
14		Responses Submitted	6 days	Fri 3/31/23	Fri 4/7/23	13
15		Bid Development by Contractors	17 days	Mon 4/10/23	Tue 5/2/23	14
16		Bid Evaluation	6 days	Wed 5/3/23	Wed 5/10/23	15
17		Contractor Selection	0 days	Wed 5/10/23	Wed 5/10/23	16
18		Contracting	18 days	Thu 5/11/23	Mon 6/5/23	17
19						
20		Develop Issued For Construction (IFC) Design	35 days	Mon 4/10/23	Fri 5/26/23	
21		Revise Design Package	17 days	Mon 4/10/23	Tue 5/2/23	14
22		Submit Revised Package for MPC Review	10 days	Wed 5/3/23	Tue 5/16/23	21
23		Revise Package	8 days	Wed 5/17/23	Fri 5/26/23	22
24		Complete IFC Package	0 days	Fri 5/26/23	Fri 5/26/23	23
25						
26		SWMU-1 Remediation	144 days	Fri 6/2/23	Thu 12/21/23	
27		Remediation Kickoff	0 days	Mon 6/5/23	Mon 6/5/23	18
28		Site Prep	6 days	Tue 6/6/23	Tue 6/13/23	27
29		AL-1 Excavation & Mixing	30 days	Wed 6/14/23	Tue 7/25/23	28
30		AL-2 Excavation & Mixing	30 days	Wed 7/26/23	Tue 9/5/23	29
31		EL-1 Excavation & Mixing	45 days	Wed 9/6/23	Tue 11/7/23	30
32		Transport to Disposal Facility	110 days	Wed 7/12/23	Tue 12/12/23	29SS+20 days
33		Backfilling	110 days	Wed 7/12/23	Tue 12/12/23	29SS+20 days
34		Site Stabilization and Close-out	7 days	Wed 12/13/23	Thu 12/21/23	33
35						
36		Reporting	60 days	Fri 1/5/24	Thu 3/28/24	
37		Prepare SWMU-1 Report	60 days	Fri 1/5/24	Thu 3/28/24	34FS+10 days
38		Submit Report to NMED	0 days	Thu 3/28/24	Thu 3/28/24	37



Project: SWMU-1_Implementat
Date: Sat 2/4/23

Task · Split · Milestone · Summary · Project Summary · Inactive Task · Inactive Milestone · Inactive Summary · Manual Task · Duration-only · Manual Summary Rollup · Manual Summary · Start-only · Finish-only · External Tasks · External Milestone · Deadline · Progress · Manual Progress

Page 1

Appendix B – Zeolite Catalyst Characterization Data

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

April 09, 2021

Jake Usrey
Marathon
92 Giant Crossing Rd
Gallup, NM 87301
TEL: (505) 722-3833
FAX

RE: ESP Catalyst Fines OrderNo.: 2103351

Dear Jake Usrey:

Hall Environmental Analysis Laboratory received 1 sample(s) on 3/4/2021 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2103351**
Date Reported: **4/9/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: ESP Catalyst Fines
Project: ESP Catalyst Fines
Collection Date: 3/4/2021 8:30:00 AM
Lab ID: 2103351-001 **Matrix:** SOIL **Received Date:** 3/4/2021 3:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **VP**	
Chloride	54	7.5		mg/Kg	5	3/9/2021 4:25:44 AM	58583
Sulfate	12000	150		mg/Kg	100	3/15/2021 4:57:22 PM	58583
MERCURY, TCLP						Analyst: **ags**	
Mercury	ND	0.020		mg/L	1	3/19/2021 3:00:29 PM	58832
EPA METHOD 6010B: TCLP METALS						Analyst: **JLF**	
Arsenic	ND	5.0		mg/L	1	3/22/2021 3:40:11 PM	58827
Barium	ND	100		mg/L	1	3/22/2021 2:20:21 PM	58827
Cadmium	ND	1.0		mg/L	1	3/22/2021 2:20:21 PM	58827
Chromium	ND	5.0		mg/L	1	3/22/2021 2:20:21 PM	58827
Lead	ND	5.0		mg/L	1	3/22/2021 2:20:21 PM	58827
Selenium	ND	1.0		mg/L	1	3/22/2021 2:20:21 PM	58827
Silver	ND	5.0		mg/L	1	3/22/2021 2:20:21 PM	58827
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **mb**	
Diesel Range Organics (DRO)	21	9.4		mg/Kg	1	3/9/2021 3:57:51 PM	58572
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	3/9/2021 3:57:51 PM	58572
Surr: DNOP	115	70-130		%Rec	1	3/9/2021 3:57:51 PM	58572
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	24	10		mg/Kg	1	3/10/2021 2:55:54 PM	58564
Surr: BFB	132	75.3-105	S	%Rec	1	3/10/2021 2:55:54 PM	58564
EPA METHOD 8310: PAHS						Analyst: **TOM**	
Naphthalene	ND	0.23		mg/Kg	1	3/18/2021 9:23:14 AM	58729
1-Methylnaphthalene	ND	0.23		mg/Kg	1	3/18/2021 9:23:14 AM	58729
2-Methylnaphthalene	ND	0.23		mg/Kg	1	3/18/2021 9:23:14 AM	58729
Acenaphthylene	ND	0.23		mg/Kg	1	3/18/2021 9:23:14 AM	58729
Acenaphthene	ND	0.23		mg/Kg	1	3/18/2021 9:23:14 AM	58729
Fluorene	ND	0.027		mg/Kg	1	3/18/2021 9:23:14 AM	58729
Phenanthrene	ND	0.014		mg/Kg	1	3/18/2021 9:23:14 AM	58729
Anthracene	ND	0.014		mg/Kg	1	3/18/2021 9:23:14 AM	58729
Fluoranthene	ND	0.027		mg/Kg	1	3/18/2021 9:23:14 AM	58729
Pyrene	ND	0.027		mg/Kg	1	3/18/2021 9:23:14 AM	58729
Benz(a)anthracene	ND	0.0090		mg/Kg	1	3/18/2021 9:23:14 AM	58729
Chrysene	ND	0.023		mg/Kg	1	3/18/2021 9:23:14 AM	58729
Benzo(b)fluoranthene	ND	0.027		mg/Kg	1	3/18/2021 9:23:14 AM	58729
Benzo(k)fluoranthene	ND	0.027		mg/Kg	1	3/18/2021 9:23:14 AM	58729
Benzo(a)pyrene	ND	0.018		mg/Kg	1	3/18/2021 9:23:14 AM	58729
Dibenz(a,h)anthracene	ND	0.014		mg/Kg	1	3/18/2021 9:23:14 AM	58729
Benzo(g,h,i)perylene	ND	0.023		mg/Kg	1	3/18/2021 9:23:14 AM	58729

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix

Analytical Report
Lab Order **2103351**
Date Reported: **4/9/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon
Client Sample ID: ESP Catalyst Fines
Project: ESP Catalyst Fines
Collection Date: 3/4/2021 8:30:00 AM
Lab ID: 2103351-001 **Matrix:** SOIL **Received Date:** 3/4/2021 3:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8310: PAHS						Analyst: **TOM**	
Indeno(1,2,3-cd)pyrene	ND	0.014		mg/Kg	1	3/18/2021 9:23:14 AM	58729
Surr: Benzo(e)pyrene	90.4	32.7-129		%Rec	1	3/18/2021 9:23:14 AM	58729
EPA METHOD 8270C TCLP						Analyst: **DAM**	
2-Methylphenol	ND	200		mg/L	1	3/29/2021 7:34:15 PM	58834
3+4-Methylphenol	ND	200		mg/L	1	3/29/2021 7:34:15 PM	58834
2,4-Dinitrotoluene	ND	0.13		mg/L	1	3/29/2021 7:34:15 PM	58834
Hexachlorobenzene	ND	0.13		mg/L	1	3/29/2021 7:34:15 PM	58834
Hexachlorobutadiene	ND	0.50		mg/L	1	3/29/2021 7:34:15 PM	58834
Hexachloroethane	ND	3.0		mg/L	1	3/29/2021 7:34:15 PM	58834
Nitrobenzene	ND	2.0		mg/L	1	3/29/2021 7:34:15 PM	58834
Pentachlorophenol	ND	100		mg/L	1	3/29/2021 7:34:15 PM	58834
Pyridine	ND	5.0		mg/L	1	3/29/2021 7:34:15 PM	58834
2,4,5-Trichlorophenol	ND	400		mg/L	1	3/29/2021 7:34:15 PM	58834
2,4,6-Trichlorophenol	ND	2.0		mg/L	1	3/29/2021 7:34:15 PM	58834
Cresols, Total	ND	200		mg/L	1	3/29/2021 7:34:15 PM	58834
Surr: 2-Fluorophenol	57.8	15-97.5		%Rec	1	3/29/2021 7:34:15 PM	58834
Surr: Phenol-d5	44.6	15-77.3		%Rec	1	3/29/2021 7:34:15 PM	58834
Surr: 2,4,6-Tribromophenol	67.4	15-112		%Rec	1	3/29/2021 7:34:15 PM	58834
Surr: Nitrobenzene-d5	66.4	15-119		%Rec	1	3/29/2021 7:34:15 PM	58834
Surr: 2-Fluorobiphenyl	67.7	15-89.2		%Rec	1	3/29/2021 7:34:15 PM	58834
Surr: 4-Terphenyl-d14	81.1	15-137		%Rec	1	3/29/2021 7:34:15 PM	58834
EPA METHOD 8260B: TCLP COMPOUNDS						Analyst: **JMR**	
Benzene	ND	0.50		ppm	5	3/12/2021 7:15:38 PM	58564
1,2-Dichloroethane (EDC)	ND	0.50		ppm	5	3/12/2021 7:15:38 PM	58564
2-Butanone	ND	200		ppm	5	3/12/2021 7:15:38 PM	58564
Carbon tetrachloride	ND	0.50		ppm	5	3/12/2021 7:15:38 PM	58564
Chlorobenzene	ND	100		ppm	5	3/12/2021 7:15:38 PM	58564
Chloroform	ND	6.0		ppm	5	3/12/2021 7:15:38 PM	58564
1,4-Dichlorobenzene	ND	7.5		ppm	5	3/12/2021 7:15:38 PM	58564
1,1-Dichloroethene	ND	0.70		ppm	5	3/12/2021 7:15:38 PM	58564
Tetrachloroethene (PCE)	ND	0.70		ppm	5	3/12/2021 7:15:38 PM	58564
Trichloroethene (TCE)	ND	0.50		ppm	5	3/12/2021 7:15:38 PM	58564
Vinyl chloride	ND	0.20		ppm	5	3/12/2021 7:15:38 PM	58564
Surr: 1,2-Dichloroethane-d4	97.6	70-130		%Rec	5	3/12/2021 7:15:38 PM	58564
Surr: 4-Bromofluorobenzene	95.0	70-130		%Rec	5	3/12/2021 7:15:38 PM	58564
Surr: Dibromofluoromethane	95.9	70-130		%Rec	5	3/12/2021 7:15:38 PM	58564
Surr: Toluene-d8	104	70-130		%Rec	5	3/12/2021 7:15:38 PM	58564

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Pace Analytical®

ANALYTICAL REPORT

March 17, 2021

Hall Environmental Analysis Laboratory

Sample Delivery Group:	L1324550
Samples Received:	03/09/2021
Project Number:	
Description:	

Report To: Jackie Bolte
4901 Hawkins NE
Albuquerque, NM 87109

Entire Report Reviewed By:

John Hawkins
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

SAMPLE SUMMARY

2103351-001B ESP CATALYST FINES L1324550-01 Solid

Collected by	Collected date/time	Received date/time
	03/04/21 08:30	03/09/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9012 B	WG1634589	1	03/15/21 15:58	03/16/21 17:40	JER	Mt. Juliet, TN
Wet Chemistry by Method 9034-9030B	WG1635787	1	03/16/21 23:00	03/16/21 23:00	LDT	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1632661	1	03/11/21 01:42	03/11/21 06:26	ARD	Mt. Juliet, TN
Wet Chemistry by Method D93/1010A	WG1635024	1	03/16/21 01:59	03/16/21 01:59	CAT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins
Project Manager

Project Narrative

All Reactive Cyanide results reported in the attached report were determined as totals using method 9012B.
All Reactive Sulfide results reported in the attached report were determined as totals using method 9034/9030B.

Wet Chemistry by Method 9012 B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Reactive Cyanide	ND		0.250	1	03/16/2021 17:40	WG1634589

Wet Chemistry by Method 9034-9030B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Reactive Sulfide	ND		25.0	1	03/16/2021 23:00	WG1635787

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
Corrosivity by pH	7.33	T8	1	03/11/2021 06:26	WG1632661

Sample Narrative:

L1324550-01 WG1632661: 7.33 at 21.6C

Wet Chemistry by Method D93/1010A

Analyte	Result Deg. F	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DNI at 170		1	03/16/2021 01:59	WG1635024

Method Blank (MB)

(MB) R3631408-1 03/16/21 17:28

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Cyanide	U		0.0390	0.250

L1324415-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1324415-02 03/16/21 17:35 • (DUP) R3631408-3 03/16/21 17:36

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

L1324758-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1324758-03 03/16/21 17:45 • (DUP) R3631408-4 03/16/21 17:46

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Cyanide	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3631408-2 03/16/21 17:29

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Cyanide	2.50	2.45	98.0	85.0-115	

L1324758-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1324758-08 03/16/21 17:53 • (MS) R3631408-5 03/16/21 17:54 • (MSD) R3631408-6 03/16/21 17:55

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	1.66	ND	1.39	1.36	83.3	81.9	1	75.0-125			1.74	20

L1325883-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1325883-01 03/16/21 17:57 • (MS) R3631408-7 03/16/21 17:58 • (MSD) R3631408-8 03/16/21 17:59

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Reactive Cyanide	1.67	ND	1.62	1.65	97.2	98.8	1	75.0-125			1.63	20

Method Blank (MB)

(MB) R3631483-1 03/16/21 23:00

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Reactive Sulfide	U		7.63	25.0

Laboratory Control Sample (LCS)

(LCS) R3631483-2 03/16/21 23:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Reactive Sulfide	100	88.2	88.2	70.0-130	

Laboratory Control Sample (LCS)

(LCS) R3629532-1 03/11/21 06:26

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
Corrosivity by pH	10.0	10.1	101	99.0-101	

Sample Narrative:

LCS: 10.05 at 20.7C

Received by OCD: 3/15/2023 3:35:42 PM

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3631042-1 03/16/21 01:59 • (LCSD) R3631042-2 03/16/21 01:59

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	Deg. F	Deg. F	Deg. F	%	%	%			%	%
Ignitability	126	127	127	101	101	95.6-104			0.000	10

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Released to Imaging: 3/15/2023 4:09:30 PM

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
T8	Sample(s) received past/too close to holding time expiration.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Received by OCD: 3/15/2023 3:35:42 PM

HALL ENVIRONMENTAL ANALYSIS LABORATORY

CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975
FAX: 505-345-4107
Website: clients.hallenvironmental.com

H025

SUB CONTRATOR: Pace TN	COMPANY: PACE TN	PHONE: (800) 767-5859	FAX: (615) 758-5859
ADDRESS: 12065 Lebanon Rd		ACCOUNT #:	EMAIL:
CITY, STATE, ZIP: Mt. Juliet, TN 37122			

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	2103351-001B	ESP Catalyst Fines	4OZGU	Soil	3/4/2021 8:30:00 AM	1	Reactivity, Corrosivity and Ignitability in soil 1324550 -01

Sample Receipt Checklist

COC Seal Present/Intact:	Y N	If Applicable	
COC Signed/Accurate:	Y N	VOA Zero Headspace:	Y N
Bottles arrive intact:	Y N	Pres.Correct/Check:	Y N
Correct bottles used:	Y N		
Sufficient volume sent:	Y N		
RAD Screen <0.5 mR/hr:	Y N		

SPECIAL INSTRUCTIONS / COMMENTS: 1749 9998 4252 1 total All Cont <500 CPM

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: 3/5/2021	Time: 1:30 PM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By: MRappas	Date: 3-9-21	Time: 900

TAT: Standard ☐ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples 2.8+2.7=5.5 °C Attempt to Cool ? _____
Comments: ccrs R

Released to Imaging: 3/15/2023 4:09:30 PM

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2103351**

09-Apr-21

Client: Marathon

Project: ESP Catalyst Fines

Sample ID: **MB-58583** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**

Client ID: **PBS** Batch ID: **58583** RunNo: **75780**

Prep Date: **3/8/2021** Analysis Date: **3/9/2021** SeqNo: **2680987** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								
Sulfate	ND	1.5								

Sample ID: **LCS-58583** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**

Client ID: **LCSS** Batch ID: **58583** RunNo: **75780**

Prep Date: **3/8/2021** Analysis Date: **3/9/2021** SeqNo: **2680988** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.8	90	110			
Sulfate	29	1.5	30.00	0	95.2	90	110			

Sample ID: **2103351-001AMS** SampType: **MS** TestCode: **EPA Method 300.0: Anions**

Client ID: **ESP Catalyst Fines** Batch ID: **58583** RunNo: **75780**

Prep Date: **3/8/2021** Analysis Date: **3/9/2021** SeqNo: **2681008** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	75	7.5	15.00	53.89	142	36.7	168			

Sample ID: **2103351-001AMSD** SampType: **MSD** TestCode: **EPA Method 300.0: Anions**

Client ID: **ESP Catalyst Fines** Batch ID: **58583** RunNo: **75780**

Prep Date: **3/8/2021** Analysis Date: **3/9/2021** SeqNo: **2681009** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	75	7.5	15.00	53.89	138	36.7	168	0.761	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2103351**
09-Apr-21

Client: Marathon
Project: ESP Catalyst Fines

Sample ID: **MB-58572**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **58572**	RunNo: **75787**
Prep Date: **3/8/2021**	Analysis Date: **3/9/2021**	SeqNo: **2682240** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.9		10.00		99.0	70	130			

Sample ID: **LCS-58572**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **58572**	RunNo: **75787**
Prep Date: **3/8/2021**	Analysis Date: **3/9/2021**	SeqNo: **2682242** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.00	0	104	68.9	141			
Surr: DNOP	5.3		5.000		107	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2103351**

09-Apr-21

Client: Marathon

Project: ESP Catalyst Fines

Sample ID: **mb-58564**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **58564**	RunNo: **75810**
Prep Date: **3/8/2021**	Analysis Date: **3/9/2021**	SeqNo: **2682091** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1100		1000		106	75.3	105			S

Sample ID: **lcs-58564**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **58564**	RunNo: **75810**
Prep Date: **3/8/2021**	Analysis Date: **3/9/2021**	SeqNo: **2682092** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	28	5.0	25.00	0	111	80	120			
Surr: BFB	1200		1000		116	75.3	105			S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2103351**
09-Apr-21

Client: Marathon
Project: ESP Catalyst Fines

Sample ID: **lcs-58564** SampType: **LCS** TestCode: **EPA Method 8260B: TCLP Compounds**
Client ID: **LCSS** Batch ID: **58564** RunNo: **75863**
Prep Date: **3/8/2021** Analysis Date: **3/10/2021** SeqNo: **2687077** Units: **ppm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.050	1.000	0	97.7	70	130			
Chlorobenzene	ND	10	1.000	0	95.7	70	130			
1,1-Dichloroethene	0.95	0.070	1.000	0	95.5	70	130			
Trichloroethene (TCE)	0.80	0.050	1.000	0	79.6	70	130			
Surr: 1,2-Dichloroethane-d4	0.43		0.5000		86.7	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		98.3	70	130			
Surr: Dibromofluoromethane	0.43		0.5000		86.7	70	130			
Surr: Toluene-d8	0.48		0.5000		95.9	70	130			

Sample ID: **mb-58564** SampType: **MBLK** TestCode: **EPA Method 8260B: TCLP Compounds**
Client ID: **PBS** Batch ID: **58564** RunNo: **75863**
Prep Date: **3/8/2021** Analysis Date: **3/10/2021** SeqNo: **2687078** Units: **ppm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.050								
1,2-Dichloroethane (EDC)	ND	0.050								
2-Butanone	ND	20								
Carbon tetrachloride	ND	0.050								
Chlorobenzene	ND	10								
Chloroform	ND	0.60								
1,4-Dichlorobenzene	ND	0.75								
1,1-Dichloroethene	ND	0.070								
Tetrachloroethene (PCE)	ND	0.070								
Trichloroethene (TCE)	ND	0.050								
Vinyl chloride	ND	0.020								
Surr: 1,2-Dichloroethane-d4	0.44		0.5000		88.8	70	130			
Surr: 4-Bromofluorobenzene	0.50		0.5000		101	70	130			
Surr: Dibromofluoromethane	0.51		0.5000		102	70	130			
Surr: Toluene-d8	0.48		0.5000		96.3	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2103351**
09-Apr-21

Client: Marathon
Project: ESP Catalyst Fines

Sample ID: **lcs-58834** SampType: **LCS** TestCode: **EPA Method 8270C TCLP**
Client ID: **LCSS** Batch ID: **58834** RunNo: **76319**
Prep Date: **3/19/2021** Analysis Date: **3/29/2021** SeqNo: **2702234** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	0.055	0.0010	0.1000	0	55.0	18.9	104			
3+4-Methylphenol	0.11	0.0010	0.2000	0	56.5	11.8	115			
2,4-Dinitrotoluene	0.051	0.0010	0.1000	0	50.8	16.6	95.5			
Hexachlorobenzene	0.084	0.0010	0.1000	0	83.6	42.6	112			
Hexachlorobutadiene	0.057	0.0010	0.1000	0	57.4	11.5	87.7			
Hexachloroethane	0.052	0.0010	0.1000	0	52.1	14.3	71.4			
Nitrobenzene	0.072	0.0010	0.1000	0	71.8	23.2	109			
Pentachlorophenol	0.070	0.0010	0.1000	0	69.8	29.4	102			
Pyridine	0.046	0.0010	0.1000	0	45.7	0	62.1			
2,4,5-Trichlorophenol	0.067	0.0010	0.1000	0	67.4	32.7	112			
2,4,6-Trichlorophenol	0.068	0.0010	0.1000	0	67.5	33.9	111			
Cresols, Total	0.17	0.0010	0.3000	0	56.0	5.83	117			
Surr: 2-Fluorophenol	0.11		0.2000		55.3	15	97.5			
Surr: Phenol-d5	0.085		0.2000		42.3	15	77.3			
Surr: 2,4,6-Tribromophenol	0.15		0.2000		74.5	15	112			
Surr: Nitrobenzene-d5	0.067		0.1000		66.7	15	119			
Surr: 2-Fluorobiphenyl	0.069		0.1000		68.9	15	89.2			
Surr: 4-Terphenyl-d14	0.097		0.1000		97.0	15	137			

Sample ID: **mb-58834** SampType: **MBLK** TestCode: **EPA Method 8270C TCLP**
Client ID: **PBS** Batch ID: **58834** RunNo: **76319**
Prep Date: **3/19/2021** Analysis Date: **3/29/2021** SeqNo: **2702250** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
2-Methylphenol	ND	200								
3+4-Methylphenol	ND	200								
2,4-Dinitrotoluene	ND	0.13								
Hexachlorobenzene	ND	0.13								
Hexachlorobutadiene	ND	0.50								
Hexachloroethane	ND	3.0								
Nitrobenzene	ND	2.0								
Pentachlorophenol	ND	100								
Pyridine	ND	5.0								
2,4,5-Trichlorophenol	ND	400								
2,4,6-Trichlorophenol	ND	2.0								
Cresols, Total	ND	200								
Surr: 2-Fluorophenol	0.095		0.2000		47.3	15	97.5			
Surr: Phenol-d5	0.075		0.2000		37.5	15	77.3			
Surr: 2,4,6-Tribromophenol	0.12		0.2000		62.4	15	112			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2103351**
09-Apr-21

Client: Marathon
Project: ESP Catalyst Fines

Sample ID: **mb-58834** SampType: **MBLK** TestCode: **EPA Method 8270C TCLP**
Client ID: **PBS** Batch ID: **58834** RunNo: **76319**
Prep Date: **3/19/2021** Analysis Date: **3/29/2021** SeqNo: **2702250** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Nitrobenzene-d5	0.054		0.1000		53.6	15	119			
Surr: 2-Fluorobiphenyl	0.056		0.1000		56.3	15	89.2			
Surr: 4-Terphenyl-d14	0.092		0.1000		92.2	15	137			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2103351**
09-Apr-21

Client: Marathon
Project: ESP Catalyst Fines

Sample ID: **MB-58729** SampType: **MBLK** TestCode: **EPA Method 8310: PAHs**
Client ID: **PBS** Batch ID: **58729** RunNo: **76016**
Prep Date: **3/15/2021** Analysis Date: **3/18/2021** SeqNo: **2691178** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	0.25								
1-Methylnaphthalene	ND	0.25								
2-Methylnaphthalene	ND	0.25								
Acenaphthylene	ND	0.25								
Acenaphthene	ND	0.25								
Fluorene	ND	0.030								
Phenanthrene	ND	0.015								
Anthracene	ND	0.015								
Fluoranthene	ND	0.030								
Pyrene	ND	0.030								
Benz(a)anthracene	ND	0.010								
Chrysene	ND	0.025								
Benzo(b)fluoranthene	ND	0.030								
Benzo(k)fluoranthene	ND	0.030								
Benzo(a)pyrene	ND	0.020								
Dibenz(a,h)anthracene	ND	0.015								
Benzo(g,h,i)perylene	ND	0.025								
Indeno(1,2,3-cd)pyrene	ND	0.015								
Surr: Benzo(e)pyrene	0.42		0.5000		84.6	32.7	129			

Sample ID: **LCS-58729** SampType: **LCS** TestCode: **EPA Method 8310: PAHs**
Client ID: **LCSS** Batch ID: **58729** RunNo: **76016**
Prep Date: **3/15/2021** Analysis Date: **3/18/2021** SeqNo: **2691179** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	1.3	0.25	2.000	0	62.5	15	113			
1-Methylnaphthalene	1.2	0.25	2.000	0	60.4	15	113			
2-Methylnaphthalene	1.2	0.25	2.000	0	61.4	15	113			
Acenaphthylene	1.3	0.25	2.000	0	64.5	15	117			
Acenaphthene	1.3	0.25	2.000	0	65.7	15	114			
Fluorene	0.14	0.030	0.2000	0	70.8	15	115			
Phenanthrene	0.082	0.015	0.1006	0	81.8	15	115			
Anthracene	0.084	0.015	0.1006	0	83.7	15	118			
Fluoranthene	0.18	0.030	0.2006	0	88.6	20.7	115			
Pyrene	0.17	0.030	0.2000	0	87.2	20.9	116			
Benz(a)anthracene	0.019	0.010	0.02000	0	92.5	20.4	119			
Chrysene	0.092	0.025	0.1006	0	91.0	21.4	116			
Benzo(b)fluoranthene	ND	0.030	0.02500	0	85.0	15.3	114			
Benzo(k)fluoranthene	ND	0.030	0.01250	0	88.0	15	118			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2103351**
09-Apr-21

Client: Marathon
Project: ESP Catalyst Fines

Sample ID: **LCS-58729** SampType: **LCS** TestCode: **EPA Method 8310: PAHs**
Client ID: **LCSS** Batch ID: **58729** RunNo: **76016**
Prep Date: **3/15/2021** Analysis Date: **3/18/2021** SeqNo: **2691179** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzo(a)pyrene	ND	0.020	0.01250	0	50.0	15	103			
Dibenz(a,h)anthracene	0.024	0.015	0.02500	0	94.0	16.1	119			
Benzo(g,h,i)perylene	ND	0.025	0.02500	0	88.0	19.5	112			
Indeno(1,2,3-cd)pyrene	0.046	0.015	0.05002	0	92.0	17.5	115			
Surr: Benzo(e)pyrene	0.49		0.5000		98.0	32.7	129			

Sample ID: **MB-58729** SampType: **MBLK** TestCode: **EPA Method 8310: PAHs**
Client ID: **PBS** Batch ID: **58729** RunNo: **76016**
Prep Date: **3/15/2021** Analysis Date: **3/18/2021** SeqNo: **2691373** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Naphthalene	ND	0.25								
1-Methylnaphthalene	ND	0.25								
2-Methylnaphthalene	ND	0.25								
Acenaphthylene	ND	0.25								
Acenaphthene	ND	0.25								
Fluorene	ND	0.030								
Phenanthrene	ND	0.015								
Anthracene	ND	0.015								
Fluoranthene	ND	0.030								
Pyrene	ND	0.030								
Benz(a)anthracene	ND	0.010								
Chrysene	ND	0.025								
Benzo(b)fluoranthene	ND	0.030								
Benzo(k)fluoranthene	ND	0.030								
Benzo(a)pyrene	ND	0.020								
Dibenz(a,h)anthracene	ND	0.015								
Benzo(g,h,i)perylene	ND	0.025								
Indeno(1,2,3-cd)pyrene	ND	0.015								
Surr: Benzo(e)pyrene	0.41		0.5000		82.7	32.7	129			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2103351**

09-Apr-21

Client: Marathon

Project: ESP Catalyst Fines

Sample ID: **MB-58832** SampType: **MBLK** TestCode: **MERCURY, TCLP**

Client ID: **PBW** Batch ID: **58832** RunNo: **76073**

Prep Date: **3/18/2021** Analysis Date: **3/19/2021** SeqNo: **2692900** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020								

Sample ID: **LLLCS-58832** SampType: **LCSLL** TestCode: **MERCURY, TCLP**

Client ID: **BatchQC** Batch ID: **58832** RunNo: **76073**

Prep Date: **3/18/2021** Analysis Date: **3/19/2021** SeqNo: **2692901** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.0001500	0	117	50	150			

Sample ID: **LCS-58832** SampType: **LCS** TestCode: **MERCURY, TCLP**

Client ID: **LCSW** Batch ID: **58832** RunNo: **76073**

Prep Date: **3/18/2021** Analysis Date: **3/19/2021** SeqNo: **2692902** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Mercury	ND	0.020	0.005000	0	108	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2103351**
09-Apr-21

Client: Marathon
Project: ESP Catalyst Fines

Sample ID: **MB-58827** SampType: **MBLK** TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW** Batch ID: **58827** RunNo: **76124**
Prep Date: **3/18/2021** Analysis Date: **3/22/2021** SeqNo: **2694973** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	100								
Cadmium	ND	1.0								
Chromium	ND	5.0								
Lead	ND	5.0								
Selenium	ND	1.0								
Silver	ND	5.0								

Sample ID: **LCS-58827** SampType: **LCS** TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW** Batch ID: **58827** RunNo: **76124**
Prep Date: **3/18/2021** Analysis Date: **3/22/2021** SeqNo: **2694975** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Barium	ND	100	0.5000	0	111	80	120			
Cadmium	ND	1.0	0.5000	0	103	80	120			
Chromium	ND	5.0	0.5000	0	106	80	120			
Lead	ND	5.0	0.5000	0	111	80	120			
Selenium	ND	1.0	0.5000	0	112	80	120			
Silver	ND	5.0	0.1000	0	106	80	120			

Sample ID: **MB-58827** SampType: **MBLK** TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **PBW** Batch ID: **58827** RunNo: **76124**
Prep Date: **3/18/2021** Analysis Date: **3/22/2021** SeqNo: **2695026** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0								

Sample ID: **LCS-58827** SampType: **LCS** TestCode: **EPA Method 6010B: TCLP Metals**
Client ID: **LCSW** Batch ID: **58827** RunNo: **76124**
Prep Date: **3/18/2021** Analysis Date: **3/22/2021** SeqNo: **2695028** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Arsenic	ND	5.0	0.5000	0	97.9	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

Sample Log-In Check List

Client Name: **Marathon** Work Order Number: **2103351** RcptNo: 1

Received By: **Isaiah Ortiz** **3/4/2021 3:40:00 PM** I-OL

Completed By: **Isaiah Ortiz** **3/5/2021 1:05:42 PM** I-OL

Reviewed By: SPA 3.5.21

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☐ No ☐ NA ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: (<2 or >12 unless noted)
Adjusted?
Checked by: AL 3/5/21

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.4	Good	Not Present			

Released to Imaging: 3/15/2023 4:09:30 PM
Received by OCD: 3/15/2023 3:35:42 PM

Chain-of-Custody Record

Client: Marathon Refining

Gallup Refining

Mailing Address:

92 Giant Crossing Road, Gallup NM 87301

Phone #: 505-722-3833

email or Fax#: 505-863-0930

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other_____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standard ☐ **Rush**_____

Project Name:

ESP Catalyst Fines

Project #:

ESP Catalyst Fines

Project Manager:

Jake Usrey 505-870-8373

Jusrey@marathonpetroleum.com

Sampler:

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 4.6-0.2(F) 4.4°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

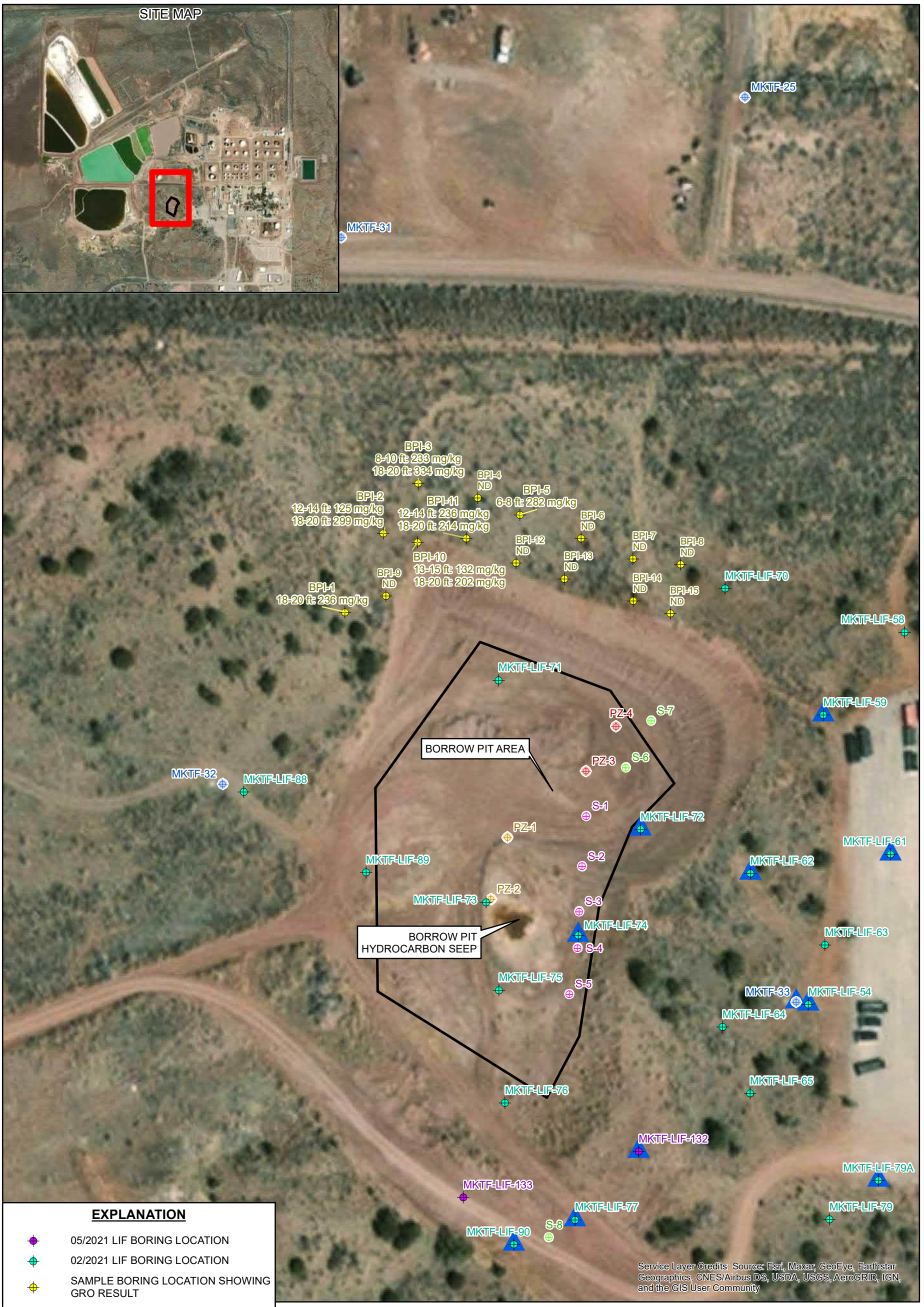
Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2103351	R8015D (DRO/GRO/MRO)CI		8260B -TCLP	8270 - TCLP	RCRA 8 METALS -TCLP	RCI	PAINT FILTER	8310 PAH	SULFATES							
3/4/21	8:30a	Media	ESP Catalyst Fines	1 - 1qt can	None	001	X		X	X	X	X		X	X							

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
3/4/21	9:30a	JAKE USREY	I-O-	courier	3/4/21	1540
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Appendix C – Borrow Area Sampling Laboratory Analyses



EXPLANATION

- 05/2021 LIF BORING LOCATION
- 02/2021 LIF BORING LOCATION
- SAMPLE BORING LOCATION SHOWING GRO RESULT
- EXISTING SUMP LOCATION
- PROPOSED SUMP LOCATION
- MONITORING WELL LOCATION
- EXISTING PIEZOMETER LOCATION
- PROPOSED PIEZOMETER LOCATION
- LIF INDICATES GASOLINE SPH OCCURRENCE

N

0 80 '

Trihydro CORPORATION
1252 Commerce Drive
Laramie, WY 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE 1

BORROW PIT
NORTH BERM SAMPLE LOCATIONS
AND GRO RESULTS

WESTERN REFINING SOUTHWEST, LLC
D/B/A MARATHON GALLUP REFINERY
GALLUP, NEW MEXICO

Drawn By: BR	Checked By: MS	Scale: 1 " = 80 '	Date: 6/14/22	File: 1_BorrowPit_N_Berm_Fig1.mxd

\\TRIHYDRO.COM\CLIENTS\TON\MARATHON\GIS\GALLUP\MAPPING\SITEWIDE_FIGURES\HYDROCARBONSEEPAREA\BORROWPITSEEP\BORROWPIT_N_WALL_BACKFILL\2021\1_BORROWPIT_N_BERM_FIG1.MXD

TABLE 1. VOLATILE ORGANIC COMPOUND DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Benzene (mg/kg)	Bromobenzene (mg/kg)	Bromochloromethane (mg/kg)	Bromodichloromethane (mg/kg)	Bromoform (mg/kg)	Bromomethane (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.000661)	ND(0.00331)	ND(0.00331)	ND(0.00331)	ND(0.00331)	ND(0.00331) UJ
BPI-1 (8-10 ft)	02/22/22	ND(0.000784)	ND(0.00392)	ND(0.00392)	ND(0.00392)	ND(0.00392)	ND(0.00392) UJ
BPI-10 (13-15 ft)	02/22/22	ND(0.00118)	ND(0.00588)	ND(0.00588)	ND(0.00588)	ND(0.00588)	ND(0.00588)
BPI-10 (18-20 ft)	02/22/22	ND(0.00118)	ND(0.0059)	ND(0.0059)	ND(0.0059)	ND(0.0059)	ND(0.0059)
BPI-11 (12-14 ft)	02/22/22	ND(0.00126)	ND(0.00628)	ND(0.00628)	ND(0.00628)	ND(0.00628)	ND(0.00628)
BPI-11 (18-20 ft)	02/22/22	ND(0.000667)	ND(0.00334)	ND(0.00334)	ND(0.00334)	ND(0.00334)	ND(0.00334) UJ
BPI-12 (10-12 ft)	02/23/22	ND(0.00114)	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00568)
BPI-12 (18-20 ft)	02/23/22	ND(0.00129)	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00645)
BPI-13 (18-20 ft)	02/23/22	ND(0.00126) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ
BPI-13 (8-10 ft)	02/23/22	ND(0.00115) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.00117)	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00584)
BPI-14 (13-15 ft)	02/23/22	ND(0.00116) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ
BPI-14 (18-20 ft)	02/23/22	ND(0.00112) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ
BPI-15 (13-15 ft)	02/24/22	ND(0.00079)	ND(0.00395)	ND(0.00395)	ND(0.00395)	ND(0.00395)	ND(0.00395)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.000778)	ND(0.00389)	ND(0.00389)	ND(0.00389)	ND(0.00389)	ND(0.00389)
BPI-15 (18-20 ft)	02/24/22	ND(0.00119)	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00596)
BPI-2 (12-14 ft)	02/22/22	ND(0.000714)	ND(0.00357)	ND(0.00357)	ND(0.00357)	ND(0.00357)	ND(0.00357) UJ
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.000628)	ND(0.00314)	ND(0.00314)	ND(0.00314)	ND(0.00314)	ND(0.00314)
BPI-2 (18-20 ft)	02/22/22	ND(0.000848)	ND(0.00424)	ND(0.00424)	ND(0.00424)	ND(0.00424)	ND(0.00424) UJ
BPI-3 (18-20 ft)	02/22/22	ND(0.000717)	ND(0.00358)	ND(0.00358)	ND(0.00358)	ND(0.00358)	ND(0.00358) UJ
BPI-3 (8-10 ft)	02/22/22	ND(0.000858)	ND(0.00429)	ND(0.00429)	ND(0.00429)	ND(0.00429)	ND(0.00429) UJ
BPI-4 (12-14 ft)	02/23/22	ND(0.00104)	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00519)
BPI-4 (23-25 ft)	02/23/22	ND(0.00113)	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00566)
BPI-5 (18-20 ft)	02/22/22	ND(0.00121)	ND(0.00603)	ND(0.00603)	ND(0.00603)	ND(0.00603)	ND(0.00603)
BPI-5 (6-8 ft)	02/22/22	ND(0.00064)	ND(0.0032)	ND(0.0032)	ND(0.0032)	ND(0.0032)	ND(0.0032) UJ
BPI-6 (11-13 ft)	02/22/22	ND(0.00125)	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.00624)
BPI-6 (18-20 ft)	02/22/22	ND(0.0012)	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.00602)
BPI-7 (13-15 ft)	02/23/22	ND(0.000706)	ND(0.00353)	ND(0.00353)	ND(0.00353)	ND(0.00353)	ND(0.00353)
BPI-7 (18-20 ft)	02/23/22	ND(0.00118)	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00591)
BPI-8 (12-15 ft)	02/23/22	ND(0.00135)	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)
BPI-8 (18-20 ft)	02/23/22	ND(0.00118)	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00589)
BPI-9 (13-15 ft)	02/23/22	ND(0.000729)	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.00365)
BPI-9 (18-20 ft)	02/23/22	ND(0.00132)	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0066)
2022 NMED Construction Worker SSL		423.4	NA	NA	142.6	23,750	17.86
2022 NMED Industrial SSL		87.24	NA	NA	30.18	1,760	94.52
2022 NMED Residential SSL		17.79	NA	NA	6.193	674.1	17.73

Dup - Field duplicate sample
J - Estimated concentration
mg/kg - Milligrams per kilogram
NA - Not applicable
ND - Not detected at the reporting limit
NMED - New Mexico Environment Department
SSL - Soil Screening Level
SWMU - Solid Waste Management Unit
UJ - Estimated reporting limit

TABLE 1. VOLATILE ORGANIC COMPOUND DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2-Butanone (mg/kg)	n-Butyl- benzene (mg/kg)	sec-Butylbenzene (mg/kg)	tert-Butyl- benzene (mg/kg)	Carbon tetrachloride (mg/kg)	Chlorobenzene (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.0132)	ND(0.00331)	ND(0.00331)	ND(0.00331)	ND(0.00331)	ND(0.00331)
BPI-1 (8-10 ft)	02/22/22	ND(0.0157)	ND(0.00392)	ND(0.00392)	ND(0.00392)	ND(0.00392)	ND(0.00392)
BPI-10 (13-15 ft)	02/22/22	ND(0.0235)	ND(0.00588)	ND(0.00588)	ND(0.00588)	ND(0.00588)	ND(0.00588)
BPI-10 (18-20 ft)	02/22/22	ND(0.0236)	ND(0.0059)	ND(0.0059)	ND(0.0059)	ND(0.0059)	ND(0.0059)
BPI-11 (12-14 ft)	02/22/22	ND(0.0251)	ND(0.00628)	ND(0.00628)	ND(0.00628)	ND(0.00628)	ND(0.00628)
BPI-11 (18-20 ft)	02/22/22	ND(0.0133)	ND(0.00334)	ND(0.00334)	ND(0.00334)	ND(0.00334)	ND(0.00334)
BPI-12 (10-12 ft)	02/23/22	ND(0.0227)	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00568)
BPI-12 (18-20 ft)	02/23/22	ND(0.0258)	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00645)
BPI-13 (18-20 ft)	02/23/22	ND(0.0253) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ
BPI-13 (8-10 ft)	02/23/22	ND(0.023) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.0233)	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00584)
BPI-14 (13-15 ft)	02/23/22	ND(0.0233) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ
BPI-14 (18-20 ft)	02/23/22	ND(0.0224) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ
BPI-15 (13-15 ft)	02/24/22	ND(0.0158)	ND(0.00395)	ND(0.00395)	ND(0.00395)	ND(0.00395)	ND(0.00395)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.0156)	ND(0.00389)	ND(0.00389)	ND(0.00389)	ND(0.00389)	ND(0.00389)
BPI-15 (18-20 ft)	02/24/22	ND(0.0238)	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00596)
BPI-2 (12-14 ft)	02/22/22	ND(0.0143)	ND(0.00357)	ND(0.00357)	ND(0.00357)	ND(0.00357)	ND(0.00357)
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.0126)	ND(0.00314)	ND(0.00314)	ND(0.00314)	ND(0.00314)	ND(0.00314)
BPI-2 (18-20 ft)	02/22/22	ND(0.017)	ND(0.00424)	ND(0.00424)	ND(0.00424)	ND(0.00424)	ND(0.00424)
BPI-3 (18-20 ft)	02/22/22	ND(0.0143)	ND(0.00358)	ND(0.00358)	ND(0.00358)	ND(0.00358)	ND(0.00358)
BPI-3 (8-10 ft)	02/22/22	ND(0.0172)	ND(0.00429)	ND(0.00429)	ND(0.00429)	ND(0.00429)	ND(0.00429)
BPI-4 (12-14 ft)	02/23/22	ND(0.0207)	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00519)
BPI-4 (23-25 ft)	02/23/22	ND(0.0226)	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00566)
BPI-5 (18-20 ft)	02/22/22	ND(0.0241)	ND(0.00603)	ND(0.00603)	ND(0.00603)	ND(0.00603)	ND(0.00603)
BPI-5 (6-8 ft)	02/22/22	ND(0.0128)	ND(0.0032)	ND(0.0032)	ND(0.0032)	ND(0.0032)	ND(0.0032)
BPI-6 (11-13 ft)	02/22/22	ND(0.025)	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.00624)
BPI-6 (18-20 ft)	02/22/22	ND(0.0241)	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.00602)
BPI-7 (13-15 ft)	02/23/22	ND(0.0141)	ND(0.00353)	ND(0.00353)	ND(0.00353)	ND(0.00353)	ND(0.00353)
BPI-7 (18-20 ft)	02/23/22	ND(0.0237)	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00591)
BPI-8 (12-15 ft)	02/23/22	ND(0.0269)	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)
BPI-8 (18-20 ft)	02/23/22	ND(0.0236)	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00589)
BPI-9 (13-15 ft)	02/23/22	ND(0.0146)	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.00365)
BPI-9 (18-20 ft)	02/23/22	ND(0.0264)	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0066)
2022 NMED Construction Worker SSL		91,660	NA	NA	NA	252.3	411.6
2022 NMED Industrial SSL		411,000	NA	NA	NA	52.5	2,157
2022 NMED Residential SSL		37,420	NA	NA	NA	10.73	378.4

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mg/kg - Milligrams per kilogram
NA - Not applicable
ND - Not detected at the reporting limit
NMED - New Mexico Environment Department
SSL - Soil Screening Level
SWMU - Solid Waste Management Unit
UJ - Estimated reporting limit

TABLE 1. VOLATILE ORGANIC COMPOUND DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Chloroethane (mg/kg)	Chloroform (mg/kg)	Chloromethane (mg/kg)	4-Chlorotoluene (mg/kg)	1,2-Dibromo 3-chloropropane (mg/kg)	Dibromochloromethane (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.00661)	ND(0.00331)	ND(0.00331)	ND(0.00331)	ND(0.00331)	ND(0.00331)
BPI-1 (8-10 ft)	02/22/22	ND(0.00784)	ND(0.00392)	ND(0.00392)	ND(0.00392)	ND(0.00392)	ND(0.00392)
BPI-10 (13-15 ft)	02/22/22	ND(0.0118)	ND(0.00588)	ND(0.00588)	ND(0.00588)	ND(0.00588)	ND(0.00588)
BPI-10 (18-20 ft)	02/22/22	ND(0.0118)	ND(0.0059)	ND(0.0059)	ND(0.0059)	ND(0.0059)	ND(0.0059)
BPI-11 (12-14 ft)	02/22/22	ND(0.0126)	ND(0.00628)	ND(0.00628)	ND(0.00628)	ND(0.00628)	ND(0.00628)
BPI-11 (18-20 ft)	02/22/22	ND(0.00667)	ND(0.00334)	ND(0.00334)	ND(0.00334)	ND(0.00334)	ND(0.00334)
BPI-12 (10-12 ft)	02/23/22	ND(0.0114)	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00568)
BPI-12 (18-20 ft)	02/23/22	ND(0.0129)	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00645)
BPI-13 (18-20 ft)	02/23/22	ND(0.0126) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ
BPI-13 (8-10 ft)	02/23/22	ND(0.0115) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.0117)	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00584)
BPI-14 (13-15 ft)	02/23/22	ND(0.0116) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ
BPI-14 (18-20 ft)	02/23/22	ND(0.0112) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ
BPI-15 (13-15 ft)	02/24/22	ND(0.0079)	ND(0.00395)	ND(0.00395)	ND(0.00395)	ND(0.00395)	ND(0.00395)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.00778)	ND(0.00389)	ND(0.00389)	ND(0.00389)	ND(0.00389)	ND(0.00389)
BPI-15 (18-20 ft)	02/24/22	ND(0.0119)	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00596)
BPI-2 (12-14 ft)	02/22/22	ND(0.00714)	ND(0.00357)	ND(0.00357)	ND(0.00357)	ND(0.00357)	ND(0.00357)
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.00628)	ND(0.00314)	ND(0.00314)	ND(0.00314)	ND(0.00314)	ND(0.00314)
BPI-2 (18-20 ft)	02/22/22	ND(0.00848)	ND(0.00424)	ND(0.00424)	ND(0.00424)	ND(0.00424)	ND(0.00424)
BPI-3 (18-20 ft)	02/22/22	ND(0.00717)	ND(0.00358)	ND(0.00358)	ND(0.00358)	ND(0.00358)	ND(0.00358)
BPI-3 (8-10 ft)	02/22/22	ND(0.00858)	ND(0.00429)	ND(0.00429)	ND(0.00429)	ND(0.00429)	ND(0.00429)
BPI-4 (12-14 ft)	02/23/22	ND(0.0104)	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00519)
BPI-4 (23-25 ft)	02/23/22	ND(0.0113)	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00566)
BPI-5 (18-20 ft)	02/22/22	ND(0.0121)	ND(0.00603)	ND(0.00603)	ND(0.00603)	ND(0.00603)	ND(0.00603)
BPI-5 (6-8 ft)	02/22/22	ND(0.0064)	ND(0.0032)	ND(0.0032)	ND(0.0032)	ND(0.0032)	ND(0.0032)
BPI-6 (11-13 ft)	02/22/22	ND(0.0125)	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.00624)
BPI-6 (18-20 ft)	02/22/22	ND(0.012)	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.00602)
BPI-7 (13-15 ft)	02/23/22	ND(0.00706)	ND(0.00353)	ND(0.00353)	ND(0.00353)	ND(0.00353)	ND(0.00353)
BPI-7 (18-20 ft)	02/23/22	ND(0.0118)	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00591)
BPI-8 (12-15 ft)	02/23/22	ND(0.0135)	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)
BPI-8 (18-20 ft)	02/23/22	ND(0.0118)	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00589)
BPI-9 (13-15 ft)	02/23/22	ND(0.00729)	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.00365)
BPI-9 (18-20 ft)	02/23/22	ND(0.0132)	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0066)
2022 NMED Construction Worker SSL		16,640	133.9	955.7	NA	5.532	340.5
2022 NMED Industrial SSL		89,540	28.66	200.8	NA	1.179	67.37
2022 NMED Residential SSL		19,000	5.899	41.14	NA	0.08583	13.9

Dup - Field duplicate sample
J - Estimated concentration
mg/kg - Milligrams per kilogram
NA - Not applicable
ND - Not detected at the reporting limit
NMED - New Mexico Environment Department
SSL - Soil Screening Level
SWMU - Solid Waste Management Unit
UJ - Estimated reporting limit

TABLE 1. VOLATILE ORGANIC COMPOUND DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,2- Dibromoethane (mg/kg)	1,2-Dichlorobenzene (mg/kg)	1,3-Dichlorobenzene (mg/kg)	1,4-Dichlorobenzene (mg/kg)	Dichlorodifluoromethane (mg/kg)	1,1-Dichloroethane (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.00331)	ND(0.00331)	ND(0.00331)	ND(0.00331)	ND(0.00331)	ND(0.00331)
BPI-1 (8-10 ft)	02/22/22	ND(0.00392)	ND(0.00392)	ND(0.00392)	ND(0.00392)	ND(0.00392)	ND(0.00392)
BPI-10 (13-15 ft)	02/22/22	ND(0.00588)	ND(0.00588)	ND(0.00588)	ND(0.00588)	ND(0.00588)	ND(0.00588)
BPI-10 (18-20 ft)	02/22/22	ND(0.0059)	ND(0.0059)	ND(0.0059)	ND(0.0059)	ND(0.0059)	ND(0.0059)
BPI-11 (12-14 ft)	02/22/22	ND(0.00628)	ND(0.00628)	ND(0.00628)	ND(0.00628)	ND(0.00628)	ND(0.00628)
BPI-11 (18-20 ft)	02/22/22	ND(0.00334)	ND(0.00334)	ND(0.00334)	ND(0.00334)	ND(0.00334)	ND(0.00334)
BPI-12 (10-12 ft)	02/23/22	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00568)
BPI-12 (18-20 ft)	02/23/22	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00645)
BPI-13 (18-20 ft)	02/23/22	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ
BPI-13 (8-10 ft)	02/23/22	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00584)
BPI-14 (13-15 ft)	02/23/22	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ
BPI-14 (18-20 ft)	02/23/22	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ
BPI-15 (13-15 ft)	02/24/22	ND(0.00395)	ND(0.00395)	ND(0.00395)	ND(0.00395)	ND(0.00395) UJ	ND(0.00395)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.00389)	ND(0.00389)	ND(0.00389)	ND(0.00389)	ND(0.00389) UJ	ND(0.00389)
BPI-15 (18-20 ft)	02/24/22	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00596)
BPI-2 (12-14 ft)	02/22/22	ND(0.00357)	ND(0.00357)	ND(0.00357)	ND(0.00357)	ND(0.00357)	ND(0.00357)
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.00314)	ND(0.00314)	ND(0.00314)	ND(0.00314)	ND(0.00314)	ND(0.00314)
BPI-2 (18-20 ft)	02/22/22	ND(0.00424)	ND(0.00424)	ND(0.00424)	ND(0.00424)	ND(0.00424)	ND(0.00424)
BPI-3 (18-20 ft)	02/22/22	ND(0.00358)	ND(0.00358)	ND(0.00358)	ND(0.00358)	ND(0.00358)	ND(0.00358)
BPI-3 (8-10 ft)	02/22/22	ND(0.00429)	ND(0.00429)	ND(0.00429)	ND(0.00429)	ND(0.00429)	ND(0.00429)
BPI-4 (12-14 ft)	02/23/22	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00519)
BPI-4 (23-25 ft)	02/23/22	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00566)
BPI-5 (18-20 ft)	02/22/22	ND(0.00603)	ND(0.00603)	ND(0.00603)	ND(0.00603)	ND(0.00603)	ND(0.00603)
BPI-5 (6-8 ft)	02/22/22	ND(0.0032)	ND(0.0032)	ND(0.0032)	ND(0.0032)	ND(0.0032)	ND(0.0032)
BPI-6 (11-13 ft)	02/22/22	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.00624)
BPI-6 (18-20 ft)	02/22/22	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.00602)
BPI-7 (13-15 ft)	02/23/22	ND(0.00353)	ND(0.00353)	ND(0.00353)	ND(0.00353)	ND(0.00353) UJ	ND(0.00353)
BPI-7 (18-20 ft)	02/23/22	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00591)
BPI-8 (12-15 ft)	02/23/22	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)
BPI-8 (18-20 ft)	02/23/22	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00589)
BPI-9 (13-15 ft)	02/23/22	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.00365) UJ	ND(0.00365)
BPI-9 (18-20 ft)	02/23/22	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0066)
2022 NMED Construction Worker SSL		16.32	2,496	NA	45,880	160.9	1,817
2022 NMED Industrial SSL		3.309	12,970	NA	6,729	864.8	383.3
2022 NMED Residential SSL		0.6725	2,150	NA	1,287	181.9	78.61

Dup - Field duplicate sample
J - Estimated concentration
mg/kg - Milligrams per kilogram
NA - Not applicable
ND - Not detected at the reporting limit
NMED - New Mexico Environment Department
SSL - Soil Screening Level
SWMU - Solid Waste Management Unit
UJ - Estimated reporting limit

TABLE 1. VOLATILE ORGANIC COMPOUND DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,2-Dichloroethane (mg/kg)	1,1-Dichloroethene (mg/kg)	cis-1,2- Dichloroethene (mg/kg)	trans-1,2-Dichloroethene (mg/kg)	1,2-Dichloropropane (mg/kg)	1,3-Dichloropropane (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.00331)	ND(0.00331)	ND(0.00331)	ND(0.00331)	ND(0.00331)	ND(0.00331)
BPI-1 (8-10 ft)	02/22/22	ND(0.00392)	ND(0.00392)	ND(0.00392)	ND(0.00392)	ND(0.00392)	ND(0.00392)
BPI-10 (13-15 ft)	02/22/22	ND(0.00588)	ND(0.00588)	ND(0.00588)	ND(0.00588)	ND(0.00588)	ND(0.00588)
BPI-10 (18-20 ft)	02/22/22	ND(0.0059)	ND(0.0059)	ND(0.0059)	ND(0.0059)	ND(0.0059)	ND(0.0059)
BPI-11 (12-14 ft)	02/22/22	ND(0.00628)	ND(0.00628)	ND(0.00628)	ND(0.00628)	ND(0.00628)	ND(0.00628)
BPI-11 (18-20 ft)	02/22/22	ND(0.00334)	ND(0.00334)	ND(0.00334)	ND(0.00334)	ND(0.00334)	ND(0.00334)
BPI-12 (10-12 ft)	02/23/22	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00568)
BPI-12 (18-20 ft)	02/23/22	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00645)
BPI-13 (18-20 ft)	02/23/22	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ
BPI-13 (8-10 ft)	02/23/22	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00584)
BPI-14 (13-15 ft)	02/23/22	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ
BPI-14 (18-20 ft)	02/23/22	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ
BPI-15 (13-15 ft)	02/24/22	ND(0.00395)	ND(0.00395)	ND(0.00395)	ND(0.00395)	ND(0.00395)	ND(0.00395)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.00389)	ND(0.00389)	ND(0.00389)	ND(0.00389)	ND(0.00389)	ND(0.00389)
BPI-15 (18-20 ft)	02/24/22	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00596)
BPI-2 (12-14 ft)	02/22/22	ND(0.00357)	ND(0.00357)	ND(0.00357)	ND(0.00357)	ND(0.00357)	ND(0.00357)
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.00314)	ND(0.00314)	ND(0.00314)	ND(0.00314)	ND(0.00314)	ND(0.00314)
BPI-2 (18-20 ft)	02/22/22	ND(0.00424)	ND(0.00424)	ND(0.00424)	ND(0.00424)	ND(0.00424)	ND(0.00424)
BPI-3 (18-20 ft)	02/22/22	ND(0.00358)	ND(0.00358)	ND(0.00358)	ND(0.00358)	ND(0.00358)	ND(0.00358)
BPI-3 (8-10 ft)	02/22/22	ND(0.00429)	ND(0.00429)	ND(0.00429)	ND(0.00429)	ND(0.00429)	ND(0.00429)
BPI-4 (12-14 ft)	02/23/22	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00519)
BPI-4 (23-25 ft)	02/23/22	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00566)
BPI-5 (18-20 ft)	02/22/22	ND(0.00603)	ND(0.00603)	ND(0.00603)	ND(0.00603)	ND(0.00603)	ND(0.00603)
BPI-5 (6-8 ft)	02/22/22	ND(0.0032)	ND(0.0032)	ND(0.0032)	ND(0.0032)	ND(0.0032)	ND(0.0032)
BPI-6 (11-13 ft)	02/22/22	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.00624)
BPI-6 (18-20 ft)	02/22/22	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.00602)
BPI-7 (13-15 ft)	02/23/22	ND(0.00353)	ND(0.00353)	ND(0.00353)	ND(0.00353)	ND(0.00353)	ND(0.00353)
BPI-7 (18-20 ft)	02/23/22	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00591)
BPI-8 (12-15 ft)	02/23/22	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)
BPI-8 (18-20 ft)	02/23/22	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00589)
BPI-9 (13-15 ft)	02/23/22	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.00365)
BPI-9 (18-20 ft)	02/23/22	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0066)
2022 NMED Construction Worker SSL		195.4	423.9	707.9	206.5	415	NA
2022 NMED Industrial SSL		40.67	2,255	2,596	1,096	86.82	NA
2022 NMED Residential SSL		8.315	439.9	156.4	210.2	17.77	NA

Dup - Field duplicate sample
J - Estimated concentration
mg/kg - Milligrams per kilogram
NA - Not applicable
ND - Not detected at the reporting limit
NMED - New Mexico Environment Department
SSL - Soil Screening Level
SWMU - Solid Waste Management Unit
UJ - Estimated reporting limit

TABLE 1. VOLATILE ORGANIC COMPOUND DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2,2-Dichloropropane (mg/kg)	1,1-Dichloropropene (mg/kg)	Cis-1,3-dichloropropene (mg/kg)	trans-1,3-Dichloropropene (mg/kg)	1,4-Dioxane (mg/kg)	Ethylbenzene (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.00331) UJ	ND(0.00331)	ND(0.00331)	ND(0.00331)	ND(0.00557)	ND(0.000661)
BPI-1 (8-10 ft)	02/22/22	ND(0.00392) UJ	ND(0.00392)	ND(0.00392)	ND(0.00392)	ND(0.00561)	ND(0.000784)
BPI-10 (13-15 ft)	02/22/22	ND(0.00588)	ND(0.00588)	ND(0.00588)	ND(0.00588)	ND(0.00593)	ND(0.00118)
BPI-10 (18-20 ft)	02/22/22	ND(0.0059)	ND(0.0059)	ND(0.0059)	ND(0.0059)	ND(0.00585)	ND(0.00118)
BPI-11 (12-14 ft)	02/22/22	ND(0.00628)	ND(0.00628)	ND(0.00628)	ND(0.00628)	ND(0.00629)	ND(0.00126)
BPI-11 (18-20 ft)	02/22/22	ND(0.00334) UJ	ND(0.00334)	ND(0.00334)	ND(0.00334)	ND(0.00598)	ND(0.000667)
BPI-12 (10-12 ft)	02/23/22	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.0057)	ND(0.00114)
BPI-12 (18-20 ft)	02/23/22	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00632)	ND(0.00129)
BPI-13 (18-20 ft)	02/23/22	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00624)	ND(0.00126) UJ
BPI-13 (8-10 ft)	02/23/22	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00575)	ND(0.00115) UJ
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00574)	ND(0.00117)
BPI-14 (13-15 ft)	02/23/22	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.0058)	ND(0.00116) UJ
BPI-14 (18-20 ft)	02/23/22	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.00561)	ND(0.00112) UJ
BPI-15 (13-15 ft)	02/24/22	ND(0.00395)	ND(0.00395)	ND(0.00395)	ND(0.00395)	ND(0.00573)	ND(0.00079)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.00389)	ND(0.00389)	ND(0.00389)	ND(0.00389)	ND(0.00573)	ND(0.000778)
BPI-15 (18-20 ft)	02/24/22	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00597)	ND(0.00119)
BPI-2 (12-14 ft)	02/22/22	ND(0.00357) UJ	ND(0.00357)	ND(0.00357)	ND(0.00357)	ND(0.00522)	ND(0.000714)
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.00314)	ND(0.00314)	ND(0.00314)	ND(0.00314)	ND(0.00299)	ND(0.000628)
BPI-2 (18-20 ft)	02/22/22	ND(0.00424) UJ	ND(0.00424)	ND(0.00424)	ND(0.00424)	ND(0.00429)	ND(0.000848)
BPI-3 (18-20 ft)	02/22/22	ND(0.00358) UJ	ND(0.00358)	ND(0.00358)	ND(0.00358)	ND(0.00577)	ND(0.000717)
BPI-3 (8-10 ft)	02/22/22	ND(0.00429) UJ	ND(0.00429)	ND(0.00429)	ND(0.00429)	ND(0.00554)	ND(0.000858)
BPI-4 (12-14 ft)	02/23/22	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00518)	ND(0.00104)
BPI-4 (23-25 ft)	02/23/22	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00561)	ND(0.00113)
BPI-5 (18-20 ft)	02/22/22	ND(0.00603)	ND(0.00603)	ND(0.00603)	ND(0.00603)	ND(0.00609)	ND(0.00121)
BPI-5 (6-8 ft)	02/22/22	ND(0.0032) UJ	ND(0.0032)	ND(0.0032)	ND(0.0032)	ND(0.00525)	ND(0.00064)
BPI-6 (11-13 ft)	02/22/22	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.00125)
BPI-6 (18-20 ft)	02/22/22	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.0012)
BPI-7 (13-15 ft)	02/23/22	ND(0.00353)	ND(0.00353)	ND(0.00353)	ND(0.00353)	ND(0.00564)	ND(0.000706)
BPI-7 (18-20 ft)	02/23/22	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00587)	ND(0.00118)
BPI-8 (12-15 ft)	02/23/22	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00135)
BPI-8 (18-20 ft)	02/23/22	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.006)	ND(0.00118)
BPI-9 (13-15 ft)	02/23/22	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.00558)	ND(0.000729)
BPI-9 (18-20 ft)	02/23/22	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.00657)	ND(0.00132)
2022 NMED Construction Worker SSL		NA	NA	NA	NA	1,881	1,772
2022 NMED Industrial SSL		NA	NA	NA	NA	256.6	367.6
2022 NMED Residential SSL		NA	NA	NA	NA	53.26	75.11

Dup - Field duplicate sample
J - Estimated concentration
mg/kg - Milligrams per kilogram
NA - Not applicable
ND - Not detected at the reporting limit
NMED - New Mexico Environment Department
SSL - Soil Screening Level
SWMU - Solid Waste Management Unit
UJ - Estimated reporting limit

TABLE 1. VOLATILE ORGANIC COMPOUND DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Hexachlorobutadiene (mg/kg)	Isopropylbenzene (mg/kg)	p-Isopropyl-toluene (mg/kg)	Methylene Chloride (mg/kg)	MTBE (mg/kg)	Naphthalene (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.00331)	ND(0.00331)	ND(0.00331)	ND(0.0132)	ND(0.00331)	ND(0.00661)
BPI-1 (8-10 ft)	02/22/22	ND(0.00392)	ND(0.00392)	ND(0.00392)	ND(0.0157)	ND(0.00392)	ND(0.00784)
BPI-10 (13-15 ft)	02/22/22	ND(0.00588)	ND(0.00588)	ND(0.00588)	ND(0.0235)	ND(0.00588)	ND(0.0118)
BPI-10 (18-20 ft)	02/22/22	ND(0.0059)	ND(0.0059)	ND(0.0059)	ND(0.0236)	ND(0.0059)	ND(0.0118)
BPI-11 (12-14 ft)	02/22/22	ND(0.00628)	ND(0.00628)	ND(0.00628)	ND(0.0251)	ND(0.00628)	ND(0.0126)
BPI-11 (18-20 ft)	02/22/22	ND(0.00334)	ND(0.00334)	ND(0.00334)	ND(0.0133)	ND(0.00334)	ND(0.00667)
BPI-12 (10-12 ft)	02/23/22	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.0227)	ND(0.00568)	ND(0.0114)
BPI-12 (18-20 ft)	02/23/22	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.0258)	ND(0.00645)	ND(0.0129)
BPI-13 (18-20 ft)	02/23/22	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.0253) UJ	ND(0.00631) UJ	ND(0.0126) UJ
BPI-13 (8-10 ft)	02/23/22	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.023) UJ	ND(0.00574) UJ	ND(0.0115) UJ
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.0233)	ND(0.00584)	ND(0.0117)
BPI-14 (13-15 ft)	02/23/22	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.0233) UJ	ND(0.00582) UJ	ND(0.0116) UJ
BPI-14 (18-20 ft)	02/23/22	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0224) UJ	ND(0.0056) UJ	ND(0.0112) UJ
BPI-15 (13-15 ft)	02/24/22	ND(0.00395)	ND(0.00395)	ND(0.00395)	ND(0.0158)	ND(0.00395)	ND(0.0079)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.00389)	ND(0.00389)	ND(0.00389)	ND(0.0156)	ND(0.00389)	ND(0.00778)
BPI-15 (18-20 ft)	02/24/22	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.0238)	ND(0.00596)	ND(0.0119)
BPI-2 (12-14 ft)	02/22/22	ND(0.00357)	ND(0.00357)	ND(0.00357)	ND(0.0143)	ND(0.00357)	ND(0.00714)
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.00314)	ND(0.00314)	ND(0.00314)	ND(0.0126)	ND(0.00314)	ND(0.00628)
BPI-2 (18-20 ft)	02/22/22	ND(0.00424)	ND(0.00424)	ND(0.00424)	ND(0.017)	ND(0.00424)	ND(0.00848)
BPI-3 (18-20 ft)	02/22/22	ND(0.00358)	ND(0.00358)	ND(0.00358)	ND(0.0143)	ND(0.00358)	ND(0.00717)
BPI-3 (8-10 ft)	02/22/22	ND(0.00429)	ND(0.00429)	ND(0.00429)	ND(0.0172)	ND(0.00429)	ND(0.00858)
BPI-4 (12-14 ft)	02/23/22	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.0207)	ND(0.00519)	ND(0.0104)
BPI-4 (23-25 ft)	02/23/22	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.0226)	ND(0.00566)	ND(0.0113)
BPI-5 (18-20 ft)	02/22/22	ND(0.00603)	ND(0.00603)	ND(0.00603)	ND(0.0241)	ND(0.00603)	ND(0.0121)
BPI-5 (6-8 ft)	02/22/22	ND(0.0032)	ND(0.0032)	ND(0.0032)	ND(0.0128)	ND(0.0032)	ND(0.0064)
BPI-6 (11-13 ft)	02/22/22	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.025)	ND(0.00624)	ND(0.0125)
BPI-6 (18-20 ft)	02/22/22	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.0241)	0.00231 J	ND(0.012)
BPI-7 (13-15 ft)	02/23/22	ND(0.00353)	ND(0.00353)	ND(0.00353)	ND(0.0141)	ND(0.00353)	ND(0.00706)
BPI-7 (18-20 ft)	02/23/22	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.0237)	ND(0.00591)	ND(0.0118)
BPI-8 (12-15 ft)	02/23/22	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.0269)	ND(0.00673)	ND(0.0135)
BPI-8 (18-20 ft)	02/23/22	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.0236)	ND(0.00589)	ND(0.0118)
BPI-9 (13-15 ft)	02/23/22	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.0146)	ND(0.00365)	ND(0.00729)
BPI-9 (18-20 ft)	02/23/22	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0264)	ND(0.0066)	ND(0.0132)
2022 NMED Construction Worker SSL		2,395	2,738	NA	89,550	NA	632.9
2022 NMED Industrial SSL		52.08	14,220	NA	14,400	NA	108.2
2022 NMED Residential SSL		68.28	2,364	NA	765.7	NA	22.6

Dup - Field duplicate sample
J - Estimated concentration
mg/kg - Milligrams per kilogram
NA - Not applicable
ND - Not detected at the reporting limit
NMED - New Mexico Environment Department
SSL - Soil Screening Level
SWMU - Solid Waste Management Unit
UJ - Estimated reporting limit

TABLE 1. VOLATILE ORGANIC COMPOUND DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	n-Propyl- benzene (mg/kg)	Styrene (mg/kg)	1,1,1,2-Tetrachloroethane (mg/kg)	1,1,2,2-Tetrachloroethane (mg/kg)	Tetrachloroethene (mg/kg)	Toluene (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.00331)	ND(0.00331)	ND(0.00331)	ND(0.00331) UJ	ND(0.00331)	ND(0.00331)
BPI-1 (8-10 ft)	02/22/22	ND(0.00392)	ND(0.00392)	ND(0.00392)	ND(0.00392) UJ	ND(0.00392)	ND(0.00392)
BPI-10 (13-15 ft)	02/22/22	ND(0.00588)	ND(0.00588)	ND(0.00588)	ND(0.00588) UJ	ND(0.00588)	ND(0.00588)
BPI-10 (18-20 ft)	02/22/22	ND(0.0059)	ND(0.0059)	ND(0.0059)	ND(0.0059) UJ	ND(0.0059)	ND(0.0059)
BPI-11 (12-14 ft)	02/22/22	ND(0.00628)	ND(0.00628)	ND(0.00628)	ND(0.00628) UJ	ND(0.00628)	ND(0.00628)
BPI-11 (18-20 ft)	02/22/22	ND(0.00334)	ND(0.00334)	ND(0.00334)	ND(0.00334) UJ	ND(0.00334)	ND(0.00334)
BPI-12 (10-12 ft)	02/23/22	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00568)
BPI-12 (18-20 ft)	02/23/22	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00645)
BPI-13 (18-20 ft)	02/23/22	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ
BPI-13 (8-10 ft)	02/23/22	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00584)
BPI-14 (13-15 ft)	02/23/22	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ
BPI-14 (18-20 ft)	02/23/22	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ
BPI-15 (13-15 ft)	02/24/22	ND(0.00395)	ND(0.00395)	ND(0.00395)	ND(0.00395)	ND(0.00395)	ND(0.00395)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.00389)	ND(0.00389)	ND(0.00389)	ND(0.00389)	ND(0.00389)	ND(0.00389)
BPI-15 (18-20 ft)	02/24/22	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00596)
BPI-2 (12-14 ft)	02/22/22	ND(0.00357)	ND(0.00357)	ND(0.00357)	ND(0.00357) UJ	ND(0.00357)	ND(0.00357)
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.00314)	ND(0.00314)	ND(0.00314)	ND(0.00314) UJ	ND(0.00314)	ND(0.00314)
BPI-2 (18-20 ft)	02/22/22	ND(0.00424)	ND(0.00424)	ND(0.00424)	ND(0.00424) UJ	ND(0.00424)	ND(0.00424)
BPI-3 (18-20 ft)	02/22/22	ND(0.00358)	ND(0.00358)	ND(0.00358)	ND(0.00358) UJ	ND(0.00358)	ND(0.00358)
BPI-3 (8-10 ft)	02/22/22	ND(0.00429)	ND(0.00429)	ND(0.00429)	ND(0.00429) UJ	ND(0.00429)	ND(0.00429)
BPI-4 (12-14 ft)	02/23/22	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00519)
BPI-4 (23-25 ft)	02/23/22	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00566)
BPI-5 (18-20 ft)	02/22/22	ND(0.00603)	ND(0.00603)	ND(0.00603)	ND(0.00603) UJ	ND(0.00603)	ND(0.00603)
BPI-5 (6-8 ft)	02/22/22	ND(0.0032)	ND(0.0032)	ND(0.0032)	ND(0.0032) UJ	ND(0.0032)	ND(0.0032)
BPI-6 (11-13 ft)	02/22/22	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.00624) UJ	ND(0.00624)	ND(0.00624)
BPI-6 (18-20 ft)	02/22/22	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.00602) UJ	ND(0.00602)	ND(0.00602)
BPI-7 (13-15 ft)	02/23/22	ND(0.00353)	ND(0.00353)	ND(0.00353)	ND(0.00353)	ND(0.00353)	ND(0.00353)
BPI-7 (18-20 ft)	02/23/22	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00591)
BPI-8 (12-15 ft)	02/23/22	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)
BPI-8 (18-20 ft)	02/23/22	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00589)
BPI-9 (13-15 ft)	02/23/22	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.00365)
BPI-9 (18-20 ft)	02/23/22	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0066)
2022 NMED Construction Worker SSL	NA	10,170	658.5	196.5	7,911	14,040	
2022 NMED Industrial SSL	NA	51,300	137.2	39.4	1,649	61,340	
2022 NMED Residential SSL	NA	7,264	28.06	7.984	337.4	5,228	

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mg/kg - Milligrams per kilogram
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NMED - New Mexico Environment Department
SSL - Soil Screening Level
SWMU - Solid Waste Management Unit
UJ - Estimated reporting limit

TABLE 1. VOLATILE ORGANIC COMPOUND DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,2,3-Trichlorobenzene (mg/kg)	1,2,4-Trichlorobenzene (mg/kg)	1,1,1-Trichloroethane (mg/kg)	1,1,2-Trichloroethane (mg/kg)	Trichloroethene (mg/kg)	Trichlorofluoromethane (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.00331)	ND(0.00331)	ND(0.00331) UJ	ND(0.00331)	ND(0.00331) UJ	ND(0.00331) UJ
BPI-1 (8-10 ft)	02/22/22	ND(0.00392)	ND(0.00392)	ND(0.00392) UJ	ND(0.00392)	ND(0.00392) UJ	ND(0.00392) UJ
BPI-10 (13-15 ft)	02/22/22	ND(0.00588)	ND(0.00588)	ND(0.00588)	ND(0.00588)	ND(0.00588)	ND(0.00588) UJ
BPI-10 (18-20 ft)	02/22/22	ND(0.0059)	ND(0.0059)	ND(0.0059)	ND(0.0059)	ND(0.0059)	ND(0.0059) UJ
BPI-11 (12-14 ft)	02/22/22	ND(0.00628)	ND(0.00628)	ND(0.00628)	ND(0.00628)	ND(0.00628)	ND(0.00628) UJ
BPI-11 (18-20 ft)	02/22/22	ND(0.00334)	ND(0.00334)	ND(0.00334) UJ	ND(0.00334)	ND(0.00334) UJ	ND(0.00334) UJ
BPI-12 (10-12 ft)	02/23/22	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00568)
BPI-12 (18-20 ft)	02/23/22	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00645)
BPI-13 (18-20 ft)	02/23/22	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ
BPI-13 (8-10 ft)	02/23/22	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00584)
BPI-14 (13-15 ft)	02/23/22	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ
BPI-14 (18-20 ft)	02/23/22	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ
BPI-15 (13-15 ft)	02/24/22	ND(0.00395)	ND(0.00395)	ND(0.00395)	ND(0.00395)	ND(0.00395)	ND(0.00395)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.00389)	ND(0.00389)	ND(0.00389)	ND(0.00389)	ND(0.00389)	ND(0.00389)
BPI-15 (18-20 ft)	02/24/22	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00596)
BPI-2 (12-14 ft)	02/22/22	ND(0.00357)	ND(0.00357)	ND(0.00357) UJ	ND(0.00357)	ND(0.00357) UJ	ND(0.00357) UJ
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.00314)	ND(0.00314)	ND(0.00314)	ND(0.00314)	ND(0.00314)	ND(0.00314) UJ
BPI-2 (18-20 ft)	02/22/22	ND(0.00424)	ND(0.00424)	ND(0.00424) UJ	ND(0.00424)	ND(0.00424) UJ	ND(0.00424) UJ
BPI-3 (18-20 ft)	02/22/22	ND(0.00358)	ND(0.00358)	ND(0.00358) UJ	ND(0.00358)	ND(0.00358) UJ	ND(0.00358) UJ
BPI-3 (8-10 ft)	02/22/22	ND(0.00429)	ND(0.00429)	ND(0.00429) UJ	ND(0.00429)	ND(0.00429) UJ	ND(0.00429) UJ
BPI-4 (12-14 ft)	02/23/22	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00519)
BPI-4 (23-25 ft)	02/23/22	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00566)
BPI-5 (18-20 ft)	02/22/22	ND(0.00603)	ND(0.00603)	ND(0.00603)	ND(0.00603)	ND(0.00603)	ND(0.00603) UJ
BPI-5 (6-8 ft)	02/22/22	ND(0.0032)	ND(0.0032)	ND(0.0032) UJ	ND(0.0032)	ND(0.0032) UJ	ND(0.0032) UJ
BPI-6 (11-13 ft)	02/22/22	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.00624) UJ
BPI-6 (18-20 ft)	02/22/22	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.00602) UJ
BPI-7 (13-15 ft)	02/23/22	ND(0.00353)	ND(0.00353)	ND(0.00353)	ND(0.00353)	ND(0.00353)	ND(0.00353)
BPI-7 (18-20 ft)	02/23/22	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00591)
BPI-8 (12-15 ft)	02/23/22	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)
BPI-8 (18-20 ft)	02/23/22	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00589)
BPI-9 (13-15 ft)	02/23/22	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.00365)	ND(0.00365)
BPI-9 (18-20 ft)	02/23/22	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0066)
2022 NMED Construction Worker SSL	NA	8,543	13,600	4,301	5,368	1,127	
2022 NMED Industrial SSL	NA	1,253	72,530	92.06	112.1	6,031	
2022 NMED Residential SSL	NA	239.7	14,370	18.76	15.48	1,231	

Dup - Field duplicate sample
J - Estimated concentration
mg/kg - Milligrams per kilogram
NA - Not applicable
ND - Not detected at the reporting limit
NMED - New Mexico Environment Department
SSL - Soil Screening Level
SWMU - Solid Waste Management Unit
UJ - Estimated reporting limit

TABLE 1. VOLATILE ORGANIC COMPOUND DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,2,3-Trichloropropane (mg/kg)	1,2,4-Trimethylbenzene (mg/kg)	1,3,5-Trimethylbenzene (mg/kg)	Vinyl Chloride (mg/kg)	m,p-Xylene (mg/kg)	o-Xylene (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.00331)	ND(0.00331)	ND(0.00331)	ND(0.00331)	ND(0.00132)	ND(0.000661)
BPI-1 (8-10 ft)	02/22/22	ND(0.00392)	ND(0.00392)	ND(0.00392)	ND(0.00392)	ND(0.00157)	ND(0.000784)
BPI-10 (13-15 ft)	02/22/22	ND(0.00588) UJ	ND(0.00588)	ND(0.00588)	ND(0.00588)	ND(0.00235)	ND(0.00118)
BPI-10 (18-20 ft)	02/22/22	ND(0.0059) UJ	ND(0.0059)	ND(0.0059)	ND(0.0059)	ND(0.00236)	ND(0.00118)
BPI-11 (12-14 ft)	02/22/22	ND(0.00628) UJ	ND(0.00628)	ND(0.00628)	ND(0.00628)	ND(0.00251)	ND(0.00126)
BPI-11 (18-20 ft)	02/22/22	ND(0.00334)	ND(0.00334)	ND(0.00334)	ND(0.00334)	ND(0.00133)	ND(0.000667)
BPI-12 (10-12 ft)	02/23/22	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00568)	ND(0.00227)	ND(0.00114)
BPI-12 (18-20 ft)	02/23/22	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00645)	ND(0.00258)	ND(0.00129)
BPI-13 (18-20 ft)	02/23/22	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00631) UJ	ND(0.00253) UJ	ND(0.00126) UJ
BPI-13 (8-10 ft)	02/23/22	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.00574) UJ	ND(0.0023) UJ	ND(0.00115) UJ
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00584)	ND(0.00233)	ND(0.00117)
BPI-14 (13-15 ft)	02/23/22	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00582) UJ	ND(0.00233) UJ	ND(0.00116) UJ
BPI-14 (18-20 ft)	02/23/22	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.0056) UJ	ND(0.00224) UJ	ND(0.00112) UJ
BPI-15 (13-15 ft)	02/24/22	ND(0.00395)	ND(0.00353)	ND(0.00395)	ND(0.00395)	ND(0.00158)	ND(0.00079)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.00389)	ND(0.00572)	ND(0.00389)	ND(0.00389)	ND(0.00156)	ND(0.000778)
BPI-15 (18-20 ft)	02/24/22	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00596)	ND(0.00238)	ND(0.00119)
BPI-2 (12-14 ft)	02/22/22	ND(0.00357)	ND(0.00357)	ND(0.00357)	ND(0.00357)	ND(0.00143)	ND(0.000714)
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.00314) UJ	ND(0.00314)	ND(0.00314)	ND(0.00314)	ND(0.00126)	ND(0.000628)
BPI-2 (18-20 ft)	02/22/22	ND(0.00424)	ND(0.00424)	ND(0.00424)	ND(0.00424)	ND(0.0017)	ND(0.000848)
BPI-3 (18-20 ft)	02/22/22	ND(0.00358)	ND(0.00358)	ND(0.00358)	ND(0.00358)	ND(0.00143)	ND(0.000717)
BPI-3 (8-10 ft)	02/22/22	ND(0.00429)	ND(0.00429)	ND(0.00429)	ND(0.00429)	ND(0.00172)	ND(0.000858)
BPI-4 (12-14 ft)	02/23/22	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00519)	ND(0.00207)	ND(0.00104)
BPI-4 (23-25 ft)	02/23/22	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00566)	ND(0.00226)	ND(0.00113)
BPI-5 (18-20 ft)	02/22/22	ND(0.00603) UJ	ND(0.00603)	ND(0.00603)	ND(0.00603)	ND(0.00241)	ND(0.00121)
BPI-5 (6-8 ft)	02/22/22	ND(0.0032)	ND(0.0032)	ND(0.0032)	ND(0.0032)	ND(0.00128)	ND(0.00064)
BPI-6 (11-13 ft)	02/22/22	ND(0.00624) UJ	ND(0.00624)	ND(0.00624)	ND(0.00624)	ND(0.0025)	ND(0.00125)
BPI-6 (18-20 ft)	02/22/22	ND(0.00602) UJ	ND(0.00602)	ND(0.00602)	ND(0.00602)	ND(0.00241)	ND(0.0012)
BPI-7 (13-15 ft)	02/23/22	ND(0.00353)	ND(0.00345)	ND(0.00353)	ND(0.00353)	ND(0.00141)	ND(0.000706)
BPI-7 (18-20 ft)	02/23/22	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00591)	ND(0.00237)	ND(0.00118)
BPI-8 (12-15 ft)	02/23/22	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00673)	ND(0.00269)	ND(0.00135)
BPI-8 (18-20 ft)	02/23/22	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00589)	ND(0.00236)	ND(0.00118)
BPI-9 (13-15 ft)	02/23/22	ND(0.00365)	ND(0.00567)	ND(0.00365)	ND(0.00365)	ND(0.00146)	ND(0.000729)
BPI-9 (18-20 ft)	02/23/22	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.0066)	ND(0.00264)	ND(0.00132)
2022 NMED Construction Worker SSL		8.259	NA	NA	161	NA	735.6
2022 NMED Industrial SSL		1.211	NA	NA	28.41	NA	3,941
2022 NMED Residential SSL		0.05105	NA	NA	0.742	NA	805.2

Dup - Field duplicate sample
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NA - Not applicable
ND - Not detected at the reporting limit
NMED - New Mexico Environment Department
SSL - Soil Screening Level
SWMU - Solid Waste Management Unit
UJ - Estimated reporting limit

TABLE 1. VOLATILE ORGANIC COMPOUND DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Xylenes, Total (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.00132)
BPI-1 (8-10 ft)	02/22/22	ND(0.00157)
BPI-10 (13-15 ft)	02/22/22	ND(0.00235)
BPI-10 (18-20 ft)	02/22/22	ND(0.00236)
BPI-11 (12-14 ft)	02/22/22	ND(0.00251)
BPI-11 (18-20 ft)	02/22/22	ND(0.00133)
BPI-12 (10-12 ft)	02/23/22	ND(0.00227)
BPI-12 (18-20 ft)	02/23/22	ND(0.00258)
BPI-13 (18-20 ft)	02/23/22	ND(0.00253) UJ
BPI-13 (8-10 ft)	02/23/22	ND(0.0023) UJ
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.00233)
BPI-14 (13-15 ft)	02/23/22	ND(0.00233) UJ
BPI-14 (18-20 ft)	02/23/22	ND(0.00224) UJ
BPI-15 (13-15 ft)	02/24/22	ND(0.00158)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.00156)
BPI-15 (18-20 ft)	02/24/22	ND(0.00238)
BPI-2 (12-14 ft)	02/22/22	ND(0.00143)
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.00126)
BPI-2 (18-20 ft)	02/22/22	ND(0.0017)
BPI-3 (18-20 ft)	02/22/22	ND(0.00143)
BPI-3 (8-10 ft)	02/22/22	ND(0.00172)
BPI-4 (12-14 ft)	02/23/22	ND(0.00207)
BPI-4 (23-25 ft)	02/23/22	ND(0.00226)
BPI-5 (18-20 ft)	02/22/22	ND(0.00241)
BPI-5 (6-8 ft)	02/22/22	ND(0.00128)
BPI-6 (11-13 ft)	02/22/22	ND(0.0025)
BPI-6 (18-20 ft)	02/22/22	ND(0.00241)
BPI-7 (13-15 ft)	02/23/22	ND(0.00141)
BPI-7 (18-20 ft)	02/23/22	ND(0.00237)
BPI-8 (12-15 ft)	02/23/22	ND(0.00269)
BPI-8 (18-20 ft)	02/23/22	ND(0.00236)
BPI-9 (13-15 ft)	02/23/22	ND(0.00146)
BPI-9 (18-20 ft)	02/23/22	ND(0.00264)

2022 NMED Construction Worker SSL	798.3
2022 NMED Industrial SSL	4,275
2022 NMED Residential SSL	870.8

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SWMU - Solid Waste Management Unit
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TABLE 2. SEMIVOLATILE ORGANIC COMPOUND DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	1,2,4-Trichlorobenzene (mg/kg)	1,2-Dichlorobenzene (mg/kg)	1,3-Dichlorobenzene (mg/kg)	1,4-Dichlorobenzene (mg/kg)	2,4,5-Trichlorophenol (mg/kg)	2,4,6-Trichlorophenol (mg/kg)	2,4-Dichlorophenol (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.184) UJ	ND(0.184) UJ	ND(0.184) UJ	ND(0.184) UJ	ND(0.184) UJ	ND(0.184) UJ	ND(0.184) UJ
BPI-1 (8-10 ft)	02/22/22	ND(0.185) UJ	ND(0.185) UJ	ND(0.185) UJ	ND(0.185) UJ	ND(0.185) UJ	ND(0.185) UJ	ND(0.185) UJ
BPI-10 (13-15 ft)	02/22/22	ND(0.19) UJ	ND(0.19) UJ	ND(0.19) UJ	ND(0.19) UJ	ND(0.19) UJ	ND(0.19) UJ	ND(0.19) UJ
BPI-10 (18-20 ft)	02/22/22	ND(0.195) UJ	ND(0.195) UJ	ND(0.195) UJ	ND(0.195) UJ	ND(0.195) UJ	ND(0.195) UJ	ND(0.195) UJ
BPI-11 (12-14 ft)	02/22/22	ND(0.209) UJ	ND(0.209) UJ	ND(0.209) UJ	ND(0.209) UJ	ND(0.209) UJ	ND(0.209) UJ	ND(0.209) UJ
BPI-11 (18-20 ft)	02/22/22	ND(0.198) UJ	ND(0.198) UJ	ND(0.198) UJ	ND(0.198) UJ	ND(0.198) UJ	ND(0.198) UJ	ND(0.198) UJ
BPI-12 (10-12 ft)	02/23/22	ND(0.189)	ND(0.189)	ND(0.189)	ND(0.189)	ND(0.189)	ND(0.189)	ND(0.189)
BPI-12 (18-20 ft)	02/23/22	ND(0.213)	ND(0.213)	ND(0.213)	ND(0.213)	ND(0.213)	ND(0.213)	ND(0.213)
BPI-13 (18-20 ft)	02/23/22	ND(0.208)	ND(0.208)	ND(0.208)	ND(0.208)	ND(0.208)	ND(0.208)	ND(0.208)
BPI-13 (8-10 ft)	02/23/22	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.193)	ND(0.193)	ND(0.193)	ND(0.193)	ND(0.193)	ND(0.193)	ND(0.193)
BPI-14 (13-15 ft)	02/23/22	ND(0.194)	ND(0.194)	ND(0.194)	ND(0.194)	ND(0.194)	ND(0.194)	ND(0.194)
BPI-14 (18-20 ft)	02/23/22	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)
BPI-15 (13-15 ft)	02/24/22	ND(0.191)	ND(0.191)	ND(0.191)	ND(0.191)	ND(0.191)	ND(0.191)	ND(0.191)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)
BPI-15 (18-20 ft)	02/24/22	ND(0.197)	ND(0.197)	ND(0.197)	ND(0.197)	ND(0.197)	ND(0.197)	ND(0.197)
BPI-2 (12-14 ft)	02/22/22	ND(0.173) UJ	ND(0.173) UJ	ND(0.173) UJ	ND(0.173) UJ	ND(0.173) UJ	ND(0.173) UJ	ND(0.173) UJ
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.176) UJ	ND(0.176) UJ	ND(0.176) UJ	ND(0.176) UJ	ND(0.176) UJ	ND(0.176) UJ	ND(0.176) UJ
BPI-2 (18-20 ft)	02/22/22	ND(0.191) UJ	ND(0.191) UJ	ND(0.191) UJ	ND(0.191) UJ	ND(0.191) UJ	ND(0.191) UJ	ND(0.191) UJ
BPI-3 (18-20 ft)	02/22/22	ND(0.182) UJ	ND(0.182) UJ	ND(0.182) UJ	ND(0.182) UJ	ND(0.182) UJ	ND(0.182) UJ	ND(0.182) UJ
BPI-3 (8-10 ft)	02/22/22	ND(0.177) UJ	ND(0.177) UJ	ND(0.177) UJ	ND(0.177) UJ	ND(0.177) UJ	ND(0.177) UJ	ND(0.177) UJ
BPI-4 (12-14 ft)	02/23/22	ND(0.174)	ND(0.174)	ND(0.174)	ND(0.174)	ND(0.174)	ND(0.174)	ND(0.174)
BPI-4 (23-25 ft)	02/23/22	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)
BPI-5 (18-20 ft)	02/22/22	ND(0.197) UJ	ND(0.197) UJ	ND(0.197) UJ	ND(0.197) UJ	ND(0.197) UJ	ND(0.197) UJ	ND(0.197) UJ
BPI-5 (6-8 ft)	02/22/22	ND(0.175) UJ	ND(0.175) UJ	ND(0.175) UJ	ND(0.175) UJ	ND(0.175) UJ	ND(0.175) UJ	ND(0.175) UJ
BPI-6 (11-13 ft)	02/22/22	ND(0.201) UJ	ND(0.201) UJ	ND(0.201) UJ	ND(0.201) UJ	ND(0.201) UJ	ND(0.201) UJ	ND(0.201) UJ
BPI-6 (18-20 ft)	02/22/22	ND(0.2) UJ	ND(0.2) UJ	ND(0.2) UJ	ND(0.2) UJ	ND(0.2) UJ	ND(0.2) UJ	ND(0.2) UJ
BPI-7 (13-15 ft)	02/23/22	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)
BPI-7 (18-20 ft)	02/23/22	ND(0.195)	ND(0.195)	ND(0.195)	ND(0.195)	ND(0.195)	ND(0.195)	ND(0.195)
BPI-8 (12-15 ft)	02/23/22	ND(0.226)	ND(0.226)	ND(0.226)	ND(0.226)	ND(0.226)	ND(0.226)	ND(0.226)
BPI-8 (18-20 ft)	02/23/22	ND(0.198)	ND(0.198)	ND(0.198)	ND(0.198)	ND(0.198)	ND(0.198)	ND(0.198)
BPI-9 (13-15 ft)	02/23/22	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)
BPI-9 (18-20 ft)	02/23/22	ND(0.22)	ND(0.22)	ND(0.22)	ND(0.22)	ND(0.22)	ND(0.22)	ND(0.22)
2022 NMED Construction Worker SSL		8,543	2,496	NA	45,880	26,910	16,980	807.2
2022 NMED Industrial SSL		1,253	12,970	NA	6,729	91,630	2,332	2,749
2022 NMED Residential SSL		239.7	2,150	NA	1,287	6,163	484.1	184.9

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SWMU - Solid Waste Management Unit
UJ - Estimated reporting limit

Notes:
1. Bold text indicates results that exceed the NMED Construction Worker, Industrial, and/or Residential SSLs.

TABLE 2. SEMIVOLATILE ORGANIC COMPOUND DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2,4-Dimethylphenol (mg/kg)	2,4-Dinitrophenol (mg/kg)	2,4-DinitroToluene (mg/kg)	2,6-DinitroToluene (mg/kg)	2-Chloronaphthalene (mg/kg)	2-Chlorophenol (mg/kg)	2-Methylnaphthalene (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.184) UJ	ND(0.368)	ND(0.184) UJ	ND(0.184)	ND(0.184) UJ	ND(0.184) UJ	ND(0.184) UJ
BPI-1 (8-10 ft)	02/22/22	ND(0.185) UJ	ND(0.37)	ND(0.185) UJ	ND(0.185)	ND(0.185) UJ	ND(0.185) UJ	ND(0.185) UJ
BPI-10 (13-15 ft)	02/22/22	ND(0.19) UJ	ND(0.379)	ND(0.19) UJ	ND(0.19)	ND(0.19) UJ	ND(0.19) UJ	ND(0.19) UJ
BPI-10 (18-20 ft)	02/22/22	ND(0.195) UJ	ND(0.39)	ND(0.195) UJ	ND(0.195)	ND(0.195) UJ	ND(0.195) UJ	ND(0.195) UJ
BPI-11 (12-14 ft)	02/22/22	ND(0.209) UJ	ND(0.417)	ND(0.209) UJ	ND(0.209)	ND(0.209) UJ	ND(0.209) UJ	ND(0.209) UJ
BPI-11 (18-20 ft)	02/22/22	ND(0.198) UJ	ND(0.396)	ND(0.198) UJ	ND(0.198)	ND(0.198) UJ	ND(0.198) UJ	ND(0.198) UJ
BPI-12 (10-12 ft)	02/23/22	ND(0.189)	ND(0.377)	ND(0.189)	ND(0.189)	ND(0.189)	ND(0.189)	ND(0.189)
BPI-12 (18-20 ft)	02/23/22	ND(0.213)	ND(0.425)	ND(0.213)	ND(0.213)	ND(0.213)	ND(0.213)	ND(0.213)
BPI-13 (18-20 ft)	02/23/22	ND(0.208)	ND(0.416)	ND(0.208)	ND(0.208)	ND(0.208)	ND(0.208)	ND(0.208)
BPI-13 (8-10 ft)	02/23/22	ND(0.192)	ND(0.385)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.193)	ND(0.387)	ND(0.193)	ND(0.193)	ND(0.193)	ND(0.193)	ND(0.193)
BPI-14 (13-15 ft)	02/23/22	ND(0.194)	ND(0.388)	ND(0.194)	ND(0.194)	ND(0.194)	ND(0.194)	ND(0.194)
BPI-14 (18-20 ft)	02/23/22	ND(0.188)	ND(0.375)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)
BPI-15 (13-15 ft)	02/24/22	ND(0.191)	ND(0.381)	ND(0.191)	ND(0.191)	ND(0.191)	ND(0.191)	ND(0.191)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.192)	ND(0.383)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)
BPI-15 (18-20 ft)	02/24/22	ND(0.197)	ND(0.393)	ND(0.197)	ND(0.197)	ND(0.197)	ND(0.197)	ND(0.197)
BPI-2 (12-14 ft)	02/22/22	ND(0.173) UJ	ND(0.347)	ND(0.173) UJ	ND(0.173)	ND(0.173) UJ	ND(0.173) UJ	ND(0.173) UJ
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.176) UJ	ND(0.353)	ND(0.176) UJ	ND(0.176)	ND(0.176) UJ	ND(0.176) UJ	ND(0.176) UJ
BPI-2 (18-20 ft)	02/22/22	ND(0.191) UJ	ND(0.383)	ND(0.191) UJ	ND(0.191)	ND(0.191) UJ	ND(0.191) UJ	ND(0.191) UJ
BPI-3 (18-20 ft)	02/22/22	ND(0.182) UJ	ND(0.365)	ND(0.182) UJ	ND(0.182)	ND(0.182) UJ	ND(0.182) UJ	ND(0.182) UJ
BPI-3 (8-10 ft)	02/22/22	ND(0.177) UJ	ND(0.354)	ND(0.177) UJ	ND(0.177)	ND(0.177) UJ	ND(0.177) UJ	ND(0.177) UJ
BPI-4 (12-14 ft)	02/23/22	ND(0.174)	ND(0.348)	ND(0.174)	ND(0.174)	ND(0.174)	ND(0.174)	ND(0.174)
BPI-4 (23-25 ft)	02/23/22	ND(0.187)	ND(0.373)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)
BPI-5 (18-20 ft)	02/22/22	ND(0.197) UJ	ND(0.394)	ND(0.197) UJ	ND(0.197)	ND(0.197) UJ	ND(0.197) UJ	ND(0.197) UJ
BPI-5 (6-8 ft)	02/22/22	ND(0.175) UJ	ND(0.349)	ND(0.175) UJ	ND(0.175)	ND(0.175) UJ	ND(0.175) UJ	ND(0.175) UJ
BPI-6 (11-13 ft)	02/22/22	ND(0.201) UJ	ND(0.403)	ND(0.201) UJ	ND(0.201)	ND(0.201) UJ	ND(0.201) UJ	ND(0.201) UJ
BPI-6 (18-20 ft)	02/22/22	ND(0.2) UJ	ND(0.4)	ND(0.2) UJ	ND(0.2)	ND(0.2) UJ	ND(0.2) UJ	ND(0.2) UJ
BPI-7 (13-15 ft)	02/23/22	ND(0.188)	ND(0.376)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)
BPI-7 (18-20 ft)	02/23/22	ND(0.195)	ND(0.39)	ND(0.195)	ND(0.195)	ND(0.195)	ND(0.195)	ND(0.195)
BPI-8 (12-15 ft)	02/23/22	ND(0.226)	ND(0.452)	ND(0.226)	ND(0.226)	ND(0.226)	ND(0.226)	ND(0.226)
BPI-8 (18-20 ft)	02/23/22	ND(0.198)	ND(0.395)	ND(0.198)	ND(0.198)	ND(0.198)	ND(0.198)	ND(0.198)
BPI-9 (13-15 ft)	02/23/22	ND(0.187)	ND(0.374)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)
BPI-9 (18-20 ft)	02/23/22	ND(0.22)	ND(0.44)	ND(0.22)	ND(0.22)	ND(0.22)	ND(0.22)	ND(0.22)
2022 NMED Construction Worker SSL		5,381	538.1	599.7	165.2	28,320	1,770	1,004
2022 NMED Industrial SSL		18,330	1,833	82.27	17.15	103,800	6,489	3,368
2022 NMED Residential SSL		1,233	123.3	17.1	3.559	6,257	391.1	231.8

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ND - Not detected at the report limit
NMED - New Mexico Environment Department
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SWMU - Solid Waste Management Unit
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Notes:
1. Bold text indicates results that exceed the NMED Construction Worker, Industrial, and/or Residential SSLs.

TABLE 2. SEMIVOLATILE ORGANIC COMPOUND DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	2-Methyl phenol (mg/kg)	2-Nitroaniline (mg/kg)	2-Nitrophenol (mg/kg)	3,3'-Dichlorobenzidine (mg/kg)	3,4-Methylphenol (mg/kg)	3-Nitroaniline (mg/kg)	2-Methyl-4,6-dinitrophenol (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.184) UJ	ND(0.368)	ND(0.184)	ND(0.368) UJ	ND(0.184) UJ	ND(0.368)	ND(0.368)
BPI-1 (8-10 ft)	02/22/22	ND(0.185) UJ	ND(0.37)	ND(0.185)	ND(0.37) UJ	ND(0.185) UJ	ND(0.37)	ND(0.37)
BPI-10 (13-15 ft)	02/22/22	ND(0.19) UJ	ND(0.379)	ND(0.19)	ND(0.379) UJ	ND(0.19) UJ	ND(0.379)	ND(0.379)
BPI-10 (18-20 ft)	02/22/22	ND(0.195) UJ	ND(0.39)	ND(0.195)	ND(0.39) UJ	ND(0.195) UJ	ND(0.39)	ND(0.39)
BPI-11 (12-14 ft)	02/22/22	ND(0.209) UJ	ND(0.417)	ND(0.209)	ND(0.417) UJ	ND(0.209) UJ	ND(0.417)	ND(0.417)
BPI-11 (18-20 ft)	02/22/22	ND(0.198) UJ	ND(0.396)	ND(0.198)	ND(0.396) UJ	ND(0.198) UJ	ND(0.396)	ND(0.396)
BPI-12 (10-12 ft)	02/23/22	ND(0.189)	ND(0.377)	ND(0.189)	ND(0.377)	ND(0.189)	ND(0.377)	ND(0.377)
BPI-12 (18-20 ft)	02/23/22	ND(0.213)	ND(0.425)	ND(0.213)	ND(0.425)	ND(0.213)	ND(0.425)	ND(0.425)
BPI-13 (18-20 ft)	02/23/22	ND(0.208)	ND(0.416)	ND(0.208)	ND(0.416)	ND(0.208)	ND(0.416)	ND(0.416)
BPI-13 (8-10 ft)	02/23/22	ND(0.192)	ND(0.385)	ND(0.192)	ND(0.385)	ND(0.192)	ND(0.385)	ND(0.385)
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.193)	ND(0.387)	ND(0.193)	ND(0.387)	ND(0.193)	ND(0.387)	ND(0.387)
BPI-14 (13-15 ft)	02/23/22	ND(0.194)	ND(0.388)	ND(0.194)	ND(0.388)	ND(0.194)	ND(0.388)	ND(0.388)
BPI-14 (18-20 ft)	02/23/22	ND(0.188)	ND(0.375)	ND(0.188)	ND(0.375)	ND(0.188)	ND(0.375)	ND(0.375)
BPI-15 (13-15 ft)	02/24/22	ND(0.191)	ND(0.381)	ND(0.191)	ND(0.381)	ND(0.191)	ND(0.381)	ND(0.381)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.192)	ND(0.383)	ND(0.192)	ND(0.383)	ND(0.192)	ND(0.383)	ND(0.383)
BPI-15 (18-20 ft)	02/24/22	ND(0.197)	ND(0.393)	ND(0.197)	ND(0.393)	ND(0.197)	ND(0.393)	ND(0.393)
BPI-2 (12-14 ft)	02/22/22	ND(0.173) UJ	ND(0.347)	ND(0.173)	ND(0.347) UJ	ND(0.173) UJ	ND(0.347)	ND(0.347)
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.176) UJ	ND(0.353)	ND(0.176)	ND(0.353) UJ	ND(0.176) UJ	ND(0.353)	ND(0.353)
BPI-2 (18-20 ft)	02/22/22	ND(0.191) UJ	ND(0.383)	ND(0.191)	ND(0.383) UJ	ND(0.191) UJ	ND(0.383)	ND(0.383)
BPI-3 (18-20 ft)	02/22/22	ND(0.182) UJ	ND(0.365)	ND(0.182)	ND(0.365) UJ	ND(0.182) UJ	ND(0.365)	ND(0.365)
BPI-3 (8-10 ft)	02/22/22	ND(0.177) UJ	ND(0.354)	ND(0.177)	ND(0.354) UJ	ND(0.177) UJ	ND(0.354)	ND(0.354)
BPI-4 (12-14 ft)	02/23/22	ND(0.174)	ND(0.348)	ND(0.174)	ND(0.348)	ND(0.174)	ND(0.348)	ND(0.348)
BPI-4 (23-25 ft)	02/23/22	ND(0.187)	ND(0.373)	ND(0.187)	ND(0.373)	ND(0.187)	ND(0.373)	ND(0.373)
BPI-5 (18-20 ft)	02/22/22	ND(0.197) UJ	ND(0.394)	ND(0.197)	ND(0.394) UJ	ND(0.197) UJ	ND(0.394)	ND(0.394)
BPI-5 (6-8 ft)	02/22/22	ND(0.175) UJ	ND(0.349)	ND(0.175)	ND(0.349) UJ	ND(0.175) UJ	ND(0.349)	ND(0.349)
BPI-6 (11-13 ft)	02/22/22	ND(0.201) UJ	ND(0.403)	ND(0.201)	ND(0.403) UJ	ND(0.201) UJ	ND(0.403)	ND(0.403)
BPI-6 (18-20 ft)	02/22/22	ND(0.2) UJ	ND(0.4)	ND(0.2)	ND(0.4) UJ	ND(0.2) UJ	ND(0.4)	ND(0.4)
BPI-7 (13-15 ft)	02/23/22	ND(0.188)	ND(0.376)	ND(0.188)	ND(0.376)	ND(0.188)	ND(0.376)	ND(0.376)
BPI-7 (18-20 ft)	02/23/22	ND(0.195)	ND(0.39)	ND(0.195)	ND(0.39)	ND(0.195)	ND(0.39)	ND(0.39)
BPI-8 (12-15 ft)	02/23/22	ND(0.226)	ND(0.452)	ND(0.226)	ND(0.452)	ND(0.226)	ND(0.452)	ND(0.452)
BPI-8 (18-20 ft)	02/23/22	ND(0.198)	ND(0.395)	ND(0.198)	ND(0.395)	ND(0.198)	ND(0.395)	ND(0.395)
BPI-9 (13-15 ft)	02/23/22	ND(0.187)	ND(0.374)	ND(0.187)	ND(0.374)	ND(0.187)	ND(0.374)	ND(0.374)
BPI-9 (18-20 ft)	02/23/22	ND(0.22)	ND(0.44)	ND(0.22)	ND(0.44)	ND(0.22)	ND(0.44)	ND(0.44)
2022 NMED Construction Worker SSL		NA	NA	NA	409.6	NA	NA	NA
2022 NMED Industrial SSL		NA	NA	NA	57.01	NA	NA	NA
2022 NMED Residential SSL		NA	NA	NA	11.83	NA	NA	NA

Dup - Field duplicate sample
J - Estimated concentration
mg/kg - Milligrams per kilogram
NA - Not applicable
ND - Not detected at the report limit
NMED - New Mexico Environment Department
SSL - Soil Screening Level
SWMU - Solid Waste Management Unit
UJ - Estimated reporting limit

Notes:
1. Bold text indicates results that exceed the NMED Construction Worker, Industrial, and/or Residential SSLs.

TABLE 2. SEMIVOLATILE ORGANIC COMPOUND DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	4-Bromophenylphenylether (mg/kg)	4-Chloro-3-Methylphenol (mg/kg)	4-Chloroaniline (mg/kg)	4-Chlorophenylphenylether (mg/kg)	4-Nitroaniline (mg/kg)	4-Nitrophenol (mg/kg)	Acenaphthene (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.184) UJ	ND(0.184) UJ	ND(0.368)	ND(0.184) UJ	ND(0.368)	ND(0.368) UJ	ND(0.184) UJ
BPI-1 (8-10 ft)	02/22/22	ND(0.185) UJ	ND(0.185) UJ	ND(0.37)	ND(0.185) UJ	ND(0.37)	ND(0.37) UJ	ND(0.185) UJ
BPI-10 (13-15 ft)	02/22/22	ND(0.19) UJ	ND(0.19) UJ	ND(0.379)	ND(0.19) UJ	ND(0.379)	ND(0.379) UJ	ND(0.19) UJ
BPI-10 (18-20 ft)	02/22/22	ND(0.195) UJ	ND(0.195) UJ	ND(0.39)	ND(0.195) UJ	ND(0.39)	ND(0.39) UJ	ND(0.195) UJ
BPI-11 (12-14 ft)	02/22/22	ND(0.209) UJ	ND(0.209) UJ	ND(0.417)	ND(0.209) UJ	ND(0.417)	ND(0.417) UJ	ND(0.209) UJ
BPI-11 (18-20 ft)	02/22/22	ND(0.198) UJ	ND(0.198) UJ	ND(0.396)	ND(0.198) UJ	ND(0.396)	ND(0.396) UJ	ND(0.198) UJ
BPI-12 (10-12 ft)	02/23/22	ND(0.189)	ND(0.189)	ND(0.377)	ND(0.189)	ND(0.377)	ND(0.377)	ND(0.189)
BPI-12 (18-20 ft)	02/23/22	ND(0.213)	ND(0.213)	ND(0.425)	ND(0.213)	ND(0.425)	ND(0.425)	ND(0.213)
BPI-13 (18-20 ft)	02/23/22	ND(0.208)	ND(0.208)	ND(0.416)	ND(0.208)	ND(0.416)	ND(0.416)	ND(0.208)
BPI-13 (8-10 ft)	02/23/22	ND(0.192)	ND(0.192)	ND(0.385)	ND(0.192)	ND(0.385)	ND(0.385)	ND(0.192)
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.193)	ND(0.193)	ND(0.387)	ND(0.193)	ND(0.387)	ND(0.387)	ND(0.193)
BPI-14 (13-15 ft)	02/23/22	ND(0.194)	ND(0.194)	ND(0.388)	ND(0.194)	ND(0.388)	ND(0.388)	ND(0.194)
BPI-14 (18-20 ft)	02/23/22	ND(0.188)	ND(0.188)	ND(0.375)	ND(0.188)	ND(0.375)	ND(0.375)	ND(0.188)
BPI-15 (13-15 ft)	02/24/22	ND(0.191)	ND(0.191)	ND(0.381)	ND(0.191)	ND(0.381)	ND(0.381)	ND(0.191)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.192)	ND(0.192)	ND(0.383)	ND(0.192)	ND(0.383)	ND(0.383)	ND(0.192)
BPI-15 (18-20 ft)	02/24/22	ND(0.197)	ND(0.197)	ND(0.393)	ND(0.197)	ND(0.393)	ND(0.393)	ND(0.197)
BPI-2 (12-14 ft)	02/22/22	ND(0.173) UJ	ND(0.173) UJ	ND(0.347)	ND(0.173) UJ	ND(0.347)	ND(0.347) UJ	ND(0.173) UJ
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.176) UJ	ND(0.176) UJ	ND(0.353)	ND(0.176) UJ	ND(0.353)	ND(0.353) UJ	ND(0.176) UJ
BPI-2 (18-20 ft)	02/22/22	ND(0.191) UJ	ND(0.191) UJ	ND(0.383)	ND(0.191) UJ	ND(0.383)	ND(0.383) UJ	ND(0.191) UJ
BPI-3 (18-20 ft)	02/22/22	ND(0.182) UJ	ND(0.182) UJ	ND(0.365)	ND(0.182) UJ	ND(0.365)	ND(0.365) UJ	ND(0.182) UJ
BPI-3 (8-10 ft)	02/22/22	ND(0.177) UJ	ND(0.177) UJ	ND(0.354)	ND(0.177) UJ	ND(0.354)	ND(0.354) UJ	ND(0.177) UJ
BPI-4 (12-14 ft)	02/23/22	ND(0.174)	ND(0.174)	ND(0.348)	ND(0.174)	ND(0.348)	ND(0.348)	ND(0.174)
BPI-4 (23-25 ft)	02/23/22	ND(0.187)	ND(0.187)	ND(0.373)	ND(0.187)	ND(0.373)	ND(0.373)	ND(0.187)
BPI-5 (18-20 ft)	02/22/22	ND(0.197) UJ	ND(0.197) UJ	ND(0.394)	ND(0.197) UJ	ND(0.394)	ND(0.394) UJ	ND(0.197) UJ
BPI-5 (6-8 ft)	02/22/22	ND(0.175) UJ	ND(0.175) UJ	ND(0.349)	ND(0.175) UJ	ND(0.349)	ND(0.349) UJ	ND(0.175) UJ
BPI-6 (11-13 ft)	02/22/22	ND(0.201) UJ	ND(0.201) UJ	ND(0.403)	ND(0.201) UJ	ND(0.403)	ND(0.403) UJ	ND(0.201) UJ
BPI-6 (18-20 ft)	02/22/22	ND(0.2) UJ	ND(0.2) UJ	ND(0.4)	ND(0.2) UJ	ND(0.4)	ND(0.4) UJ	ND(0.2) UJ
BPI-7 (13-15 ft)	02/23/22	ND(0.188)	ND(0.188)	ND(0.376)	ND(0.188)	ND(0.376)	ND(0.376)	ND(0.188)
BPI-7 (18-20 ft)	02/23/22	ND(0.195)	ND(0.195)	ND(0.39)	ND(0.195)	ND(0.39)	ND(0.39)	ND(0.195)
BPI-8 (12-15 ft)	02/23/22	ND(0.226)	ND(0.226)	ND(0.452)	ND(0.226)	ND(0.452)	ND(0.452)	ND(0.226)
BPI-8 (18-20 ft)	02/23/22	ND(0.198)	ND(0.198)	ND(0.395)	ND(0.198)	ND(0.395)	ND(0.395)	ND(0.198)
BPI-9 (13-15 ft)	02/23/22	ND(0.187)	ND(0.187)	ND(0.374)	ND(0.187)	ND(0.374)	ND(0.374)	ND(0.187)
BPI-9 (18-20 ft)	02/23/22	ND(0.22)	ND(0.22)	ND(0.44)	ND(0.22)	ND(0.44)	ND(0.44)	ND(0.22)
2022 NMED Construction Worker SSL		NA	NA	NA	NA	NA	NA	15,060
2022 NMED Industrial SSL		NA	NA	NA	NA	NA	NA	50,520
2022 NMED Residential SSL		NA	NA	NA	NA	NA	NA	3,477

Dup - Field duplicate sample
J - Estimated concentration
mg/kg - Milligrams per kilogram
NA - Not applicable
ND - Not detected at the report limit
NMED - New Mexico Environment Department
SSL - Soil Screening Level
SWMU - Solid Waste Management Unit
UJ - Estimated reporting limit

Notes:
1. Bold text indicates results that exceed the NMED Construction Worker, Industrial, and/or Residential SSLs.

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BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Acenaphthylene (mg/kg)	Aniline (mg/kg)	Anthracene (mg/kg)	Benzo(a)anthracene (mg/kg)	Benzo(a)pyrene (mg/kg)	Benzo(b)fluoranthene (mg/kg)	Benzo(ghi)perylene (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.184) UJ	ND(0.368)	ND(0.184) UJ	ND(0.184) UJ	ND(0.184) UJ	ND(0.184) UJ	ND(0.184) UJ
BPI-1 (8-10 ft)	02/22/22	ND(0.185) UJ	ND(0.37)	ND(0.185) UJ	ND(0.185) UJ	ND(0.185) UJ	ND(0.185) UJ	ND(0.185) UJ
BPI-10 (13-15 ft)	02/22/22	ND(0.19) UJ	ND(0.379)	ND(0.19) UJ	ND(0.19) UJ	ND(0.19) UJ	ND(0.19) UJ	ND(0.19) UJ
BPI-10 (18-20 ft)	02/22/22	ND(0.195) UJ	ND(0.39)	ND(0.195) UJ	ND(0.195) UJ	ND(0.195) UJ	ND(0.195) UJ	ND(0.195) UJ
BPI-11 (12-14 ft)	02/22/22	ND(0.209) UJ	ND(0.417)	ND(0.209) UJ	ND(0.209) UJ	ND(0.209) UJ	ND(0.209) UJ	ND(0.209) UJ
BPI-11 (18-20 ft)	02/22/22	ND(0.198) UJ	ND(0.396)	ND(0.198) UJ	ND(0.198) UJ	ND(0.198) UJ	ND(0.198) UJ	ND(0.198) UJ
BPI-12 (10-12 ft)	02/23/22	ND(0.189)	ND(0.377)	ND(0.189)	ND(0.189)	ND(0.189)	ND(0.189)	ND(0.189)
BPI-12 (18-20 ft)	02/23/22	ND(0.213)	ND(0.425)	ND(0.213)	ND(0.213)	ND(0.213)	ND(0.213)	ND(0.213)
BPI-13 (18-20 ft)	02/23/22	ND(0.208)	ND(0.416)	ND(0.208)	ND(0.208)	ND(0.208)	ND(0.208)	ND(0.208)
BPI-13 (8-10 ft)	02/23/22	ND(0.192)	ND(0.385)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.193)	ND(0.387)	ND(0.193)	ND(0.193)	ND(0.193)	ND(0.193)	ND(0.193)
BPI-14 (13-15 ft)	02/23/22	ND(0.194)	ND(0.388)	ND(0.194)	ND(0.194)	ND(0.194)	ND(0.194)	ND(0.194)
BPI-14 (18-20 ft)	02/23/22	ND(0.188)	ND(0.375)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)
BPI-15 (13-15 ft)	02/24/22	ND(0.191)	ND(0.381)	ND(0.191)	ND(0.191)	ND(0.191)	ND(0.191)	ND(0.191)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.192)	ND(0.383)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)
BPI-15 (18-20 ft)	02/24/22	ND(0.197)	ND(0.393)	ND(0.197)	ND(0.197)	ND(0.197)	ND(0.197)	ND(0.197)
BPI-2 (12-14 ft)	02/22/22	ND(0.173) UJ	ND(0.347)	ND(0.173) UJ	ND(0.173) UJ	ND(0.173) UJ	ND(0.173) UJ	ND(0.173) UJ
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.176) UJ	ND(0.353)	ND(0.176) UJ	ND(0.176) UJ	ND(0.176) UJ	ND(0.176) UJ	ND(0.176) UJ
BPI-2 (18-20 ft)	02/22/22	ND(0.191) UJ	ND(0.383)	ND(0.191) UJ	ND(0.191) UJ	ND(0.191) UJ	ND(0.191) UJ	ND(0.191) UJ
BPI-3 (18-20 ft)	02/22/22	ND(0.182) UJ	ND(0.365)	ND(0.182) UJ	ND(0.182) UJ	ND(0.182) UJ	ND(0.182) UJ	ND(0.182) UJ
BPI-3 (8-10 ft)	02/22/22	ND(0.177) UJ	ND(0.354)	ND(0.177) UJ	ND(0.177) UJ	ND(0.177) UJ	ND(0.177) UJ	ND(0.177) UJ
BPI-4 (12-14 ft)	02/23/22	ND(0.174)	ND(0.348)	ND(0.174)	ND(0.174)	ND(0.174)	ND(0.174)	ND(0.174)
BPI-4 (23-25 ft)	02/23/22	ND(0.187)	ND(0.373)	ND(0.187)	ND(0.187)	ND(0.187)	0.052 J	0.0313 J
BPI-5 (18-20 ft)	02/22/22	ND(0.197) UJ	ND(0.394)	ND(0.197) UJ	ND(0.197) UJ	ND(0.197) UJ	ND(0.197) UJ	ND(0.197) UJ
BPI-5 (6-8 ft)	02/22/22	ND(0.175) UJ	ND(0.349)	ND(0.175) UJ	ND(0.175) UJ	ND(0.175) UJ	ND(0.175) UJ	ND(0.175) UJ
BPI-6 (11-13 ft)	02/22/22	ND(0.201) UJ	ND(0.403)	ND(0.201) UJ	ND(0.201) UJ	ND(0.201) UJ	ND(0.201) UJ	ND(0.201) UJ
BPI-6 (18-20 ft)	02/22/22	ND(0.2) UJ	ND(0.4)	ND(0.2) UJ	ND(0.2) UJ	ND(0.2) UJ	ND(0.2) UJ	ND(0.2) UJ
BPI-7 (13-15 ft)	02/23/22	ND(0.188)	ND(0.376)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)
BPI-7 (18-20 ft)	02/23/22	ND(0.195)	ND(0.39)	ND(0.195)	ND(0.195)	ND(0.195)	ND(0.195)	ND(0.195)
BPI-8 (12-15 ft)	02/23/22	ND(0.226)	ND(0.452)	ND(0.226)	ND(0.226)	ND(0.226)	ND(0.226)	ND(0.226)
BPI-8 (18-20 ft)	02/23/22	ND(0.198)	ND(0.395)	ND(0.198)	ND(0.198)	ND(0.198)	ND(0.198)	ND(0.198)
BPI-9 (13-15 ft)	02/23/22	ND(0.187)	ND(0.374)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)
BPI-9 (18-20 ft)	02/23/22	ND(0.22)	ND(0.44)	ND(0.22)	ND(0.22)	ND(0.22)	ND(0.22)	ND(0.22)
2022 NMED Construction Worker SSL		NA	NA	75,300	239.7	172.9	239.7	NA
2022 NMED Industrial SSL		NA	NA	252,600	32.3	23.58	32.3	NA
2022 NMED Residential SSL		NA	NA	17,380	1.531	1.117	1.531	NA

Dup - Field duplicate sample
J - Estimated concentration
mg/kg - Milligrams per kilogram
NA - Not applicable
ND - Not detected at the report limit
NMED - New Mexico Environment Department
SSL - Soil Screening Level
SWMU - Solid Waste Management Unit
UJ - Estimated reporting limit

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1. Bold text indicates results that exceed the NMED Construction Worker, Industrial, and/or Residential SSLs.

TABLE 2. SEMIVOLATILE ORGANIC COMPOUND DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Benzo(k)fluoranthene (mg/kg)	Benzoic Acid (mg/kg)	Bis(2chloroethoxy)methane (mg/kg)	Bis(2-chloroethyl)ether (mg/kg)	Bis(2chloro isopropyl)ether (mg/kg)	Bis(2-ethylhexyl)phthalate (mg/kg)	Benzyl Butyl Phthalate (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.184) UJ	ND(1.1) UJ	ND(0.184) UJ	ND(0.184) UJ	ND(0.184) UJ	ND(0.368) UJ	ND(0.184) UJ
BPI-1 (8-10 ft)	02/22/22	ND(0.185) UJ	ND(1.11) UJ	ND(0.185) UJ	ND(0.185) UJ	ND(0.185) UJ	ND(0.37) UJ	ND(0.185) UJ
BPI-10 (13-15 ft)	02/22/22	ND(0.19) UJ	ND(1.14) UJ	ND(0.19) UJ	ND(0.19) UJ	ND(0.19) UJ	ND(0.379) UJ	ND(0.19) UJ
BPI-10 (18-20 ft)	02/22/22	ND(0.195) UJ	ND(1.17) UJ	ND(0.195) UJ	ND(0.195) UJ	ND(0.195) UJ	ND(0.39) UJ	ND(0.195) UJ
BPI-11 (12-14 ft)	02/22/22	ND(0.209) UJ	ND(1.25) UJ	ND(0.209) UJ	ND(0.209) UJ	ND(0.209) UJ	ND(0.417) UJ	ND(0.209) UJ
BPI-11 (18-20 ft)	02/22/22	ND(0.198) UJ	ND(1.19) UJ	ND(0.198) UJ	ND(0.198) UJ	ND(0.198) UJ	ND(0.396) UJ	ND(0.198) UJ
BPI-12 (10-12 ft)	02/23/22	ND(0.189)	ND(1.13)	ND(0.189)	ND(0.189)	ND(0.189)	ND(0.377)	ND(0.189)
BPI-12 (18-20 ft)	02/23/22	ND(0.213)	ND(1.28)	ND(0.213)	ND(0.213)	ND(0.213)	ND(0.425)	ND(0.213)
BPI-13 (18-20 ft)	02/23/22	ND(0.208)	ND(1.25)	ND(0.208)	ND(0.208)	ND(0.208)	ND(0.416)	ND(0.208)
BPI-13 (8-10 ft)	02/23/22	ND(0.192)	ND(1.15)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.385)	ND(0.192)
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.193)	ND(1.16)	ND(0.193)	ND(0.193)	ND(0.193)	ND(0.387)	ND(0.193)
BPI-14 (13-15 ft)	02/23/22	ND(0.194)	ND(1.16)	ND(0.194)	ND(0.194)	ND(0.194)	ND(0.388)	ND(0.194)
BPI-14 (18-20 ft)	02/23/22	ND(0.188)	ND(1.13)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.375)	ND(0.188)
BPI-15 (13-15 ft)	02/24/22	ND(0.191)	ND(1.14)	ND(0.191)	ND(0.191)	ND(0.191)	ND(0.381)	ND(0.191)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.192)	ND(1.15)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.383)	ND(0.192)
BPI-15 (18-20 ft)	02/24/22	ND(0.197)	ND(1.18)	ND(0.197)	ND(0.197)	ND(0.197)	ND(0.393)	ND(0.197)
BPI-2 (12-14 ft)	02/22/22	ND(0.173) UJ	ND(1.04) UJ	ND(0.173) UJ	ND(0.173) UJ	ND(0.173) UJ	ND(0.347) UJ	ND(0.173) UJ
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.176) UJ	ND(1.06) UJ	ND(0.176) UJ	ND(0.176) UJ	ND(0.176) UJ	ND(0.353) UJ	ND(0.176) UJ
BPI-2 (18-20 ft)	02/22/22	ND(0.191) UJ	ND(1.15) UJ	ND(0.191) UJ	ND(0.191) UJ	ND(0.191) UJ	ND(0.383) UJ	ND(0.191) UJ
BPI-3 (18-20 ft)	02/22/22	ND(0.182) UJ	ND(1.09) UJ	ND(0.182) UJ	ND(0.182) UJ	ND(0.182) UJ	ND(0.365) UJ	ND(0.182) UJ
BPI-3 (8-10 ft)	02/22/22	ND(0.177) UJ	ND(1.06) UJ	ND(0.177) UJ	ND(0.177) UJ	ND(0.177) UJ	ND(0.354) UJ	ND(0.177) UJ
BPI-4 (12-14 ft)	02/23/22	ND(0.174)	ND(1.04)	ND(0.174)	ND(0.174)	ND(0.174)	ND(0.348)	ND(0.174)
BPI-4 (23-25 ft)	02/23/22	ND(0.187)	ND(1.12)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.373)	ND(0.187)
BPI-5 (18-20 ft)	02/22/22	ND(0.197) UJ	ND(1.18) UJ	ND(0.197) UJ	ND(0.197) UJ	ND(0.197) UJ	ND(0.394) UJ	ND(0.197) UJ
BPI-5 (6-8 ft)	02/22/22	ND(0.175) UJ	ND(1.05) UJ	ND(0.175) UJ	ND(0.175) UJ	ND(0.175) UJ	ND(0.349) UJ	ND(0.175) UJ
BPI-6 (11-13 ft)	02/22/22	ND(0.201) UJ	ND(1.21) UJ	ND(0.201) UJ	ND(0.201) UJ	ND(0.201) UJ	ND(0.403) UJ	ND(0.201) UJ
BPI-6 (18-20 ft)	02/22/22	ND(0.2) UJ	ND(1.2) UJ	ND(0.2) UJ	ND(0.2) UJ	ND(0.2) UJ	ND(0.4) UJ	ND(0.2) UJ
BPI-7 (13-15 ft)	02/23/22	ND(0.188)	ND(1.13)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.376)	ND(0.188)
BPI-7 (18-20 ft)	02/23/22	ND(0.195)	ND(1.17)	ND(0.195)	ND(0.195)	ND(0.195)	ND(0.39)	ND(0.195)
BPI-8 (12-15 ft)	02/23/22	ND(0.226)	ND(1.35)	ND(0.226)	ND(0.226)	ND(0.226)	ND(0.452)	ND(0.226)
BPI-8 (18-20 ft)	02/23/22	ND(0.198)	ND(1.19)	ND(0.198)	ND(0.198)	ND(0.198)	ND(0.395)	ND(0.198)
BPI-9 (13-15 ft)	02/23/22	ND(0.187)	ND(1.12)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.374)	ND(0.187)
BPI-9 (18-20 ft)	02/23/22	ND(0.22)	ND(1.32)	ND(0.22)	ND(0.22)	ND(0.22)	ND(0.44)	ND(0.22)
2022 NMED Construction Worker SSL		2,313	NA	NA	1.95	NA	13,390	NA
2022 NMED Industrial SSL		322.9	NA	NA	519.1	NA	1,832	NA
2022 NMED Residential SSL		15.31	NA	NA	3.114	NA	380.4	NA

Dup - Field duplicate sample
J - Estimated concentration
mg/kg - Milligrams per kilogram
NA - Not applicable
ND - Not detected at the report limit
NMED - New Mexico Environment Department
SSL - Soil Screening Level
SWMU - Solid Waste Management Unit
UJ - Estimated reporting limit

Notes:
1. Bold text indicates results that exceed the NMED Construction Worker, Industrial, and/or Residential SSLs.

TABLE 2. SEMIVOLATILE ORGANIC COMPOUND DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Chrysene (mg/kg)	Dibenz(a,h)anthracene (mg/kg)	Dibenzofuran (mg/kg)	Diethylphthalate (mg/kg)	Dimethyl Phthalate (mg/kg)	Di-n-butylphthalate (mg/kg)	Di-n-octylphthalate (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.184) UJ	**ND(0.184) UJ**	ND(0.184) UJ	ND(0.184) UJ	ND(0.184) UJ	ND(0.184) UJ	ND(0.184) UJ
BPI-1 (8-10 ft)	02/22/22	ND(0.185) UJ	**ND(0.185) UJ**	ND(0.185) UJ	ND(0.185) UJ	ND(0.185) UJ	ND(0.185) UJ	ND(0.185) UJ
BPI-10 (13-15 ft)	02/22/22	ND(0.19) UJ	**ND(0.19) UJ**	ND(0.19) UJ	ND(0.19) UJ	ND(0.19) UJ	ND(0.19) UJ	ND(0.19) UJ
BPI-10 (18-20 ft)	02/22/22	ND(0.195) UJ	**ND(0.195) UJ**	ND(0.195) UJ	ND(0.195) UJ	ND(0.195) UJ	ND(0.195) UJ	ND(0.195) UJ
BPI-11 (12-14 ft)	02/22/22	ND(0.209) UJ	**ND(0.209) UJ**	ND(0.209) UJ	ND(0.209) UJ	ND(0.209) UJ	ND(0.209) UJ	ND(0.209) UJ
BPI-11 (18-20 ft)	02/22/22	ND(0.198) UJ	**ND(0.198) UJ**	ND(0.198) UJ	ND(0.198) UJ	ND(0.198) UJ	ND(0.198) UJ	ND(0.198) UJ
BPI-12 (10-12 ft)	02/23/22	ND(0.189)	**ND(0.189)**	ND(0.189)	ND(0.189)	ND(0.189)	ND(0.189)	ND(0.189)
BPI-12 (18-20 ft)	02/23/22	ND(0.213)	**ND(0.213)**	ND(0.213)	ND(0.213)	ND(0.213)	ND(0.213)	ND(0.213)
BPI-13 (18-20 ft)	02/23/22	ND(0.208)	**ND(0.208)**	ND(0.208)	ND(0.208)	ND(0.208)	ND(0.208)	ND(0.208)
BPI-13 (8-10 ft)	02/23/22	ND(0.192)	**ND(0.192)**	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.193)	**ND(0.193)**	ND(0.193)	ND(0.193)	ND(0.193)	ND(0.193)	ND(0.193)
BPI-14 (13-15 ft)	02/23/22	ND(0.194)	**ND(0.194)**	ND(0.194)	ND(0.194)	ND(0.194)	ND(0.194)	ND(0.194)
BPI-14 (18-20 ft)	02/23/22	ND(0.188)	**ND(0.188)**	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)
BPI-15 (13-15 ft)	02/24/22	ND(0.191)	**ND(0.191)**	ND(0.191)	ND(0.191)	ND(0.191)	ND(0.191)	ND(0.191)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.192)	**ND(0.192)**	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)
BPI-15 (18-20 ft)	02/24/22	ND(0.197)	**ND(0.197)**	ND(0.197)	ND(0.197)	ND(0.197)	ND(0.197)	ND(0.197)
BPI-2 (12-14 ft)	02/22/22	ND(0.173) UJ	**ND(0.173) UJ**	ND(0.173) UJ	ND(0.173) UJ	ND(0.173) UJ	ND(0.173) UJ	ND(0.173) UJ
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.176) UJ	**ND(0.176) UJ**	ND(0.176) UJ	ND(0.176) UJ	ND(0.176) UJ	0.0226 J	ND(0.176) UJ
BPI-2 (18-20 ft)	02/22/22	ND(0.191) UJ	**ND(0.191) UJ**	ND(0.191) UJ	ND(0.191) UJ	ND(0.191) UJ	ND(0.191) UJ	ND(0.191) UJ
BPI-3 (18-20 ft)	02/22/22	ND(0.182) UJ	**ND(0.182) UJ**	ND(0.182) UJ	ND(0.182) UJ	ND(0.182) UJ	ND(0.182) UJ	ND(0.182) UJ
BPI-3 (8-10 ft)	02/22/22	ND(0.177) UJ	**ND(0.177) UJ**	ND(0.177) UJ	ND(0.177) UJ	ND(0.177) UJ	ND(0.177) UJ	ND(0.177) UJ
BPI-4 (12-14 ft)	02/23/22	ND(0.174)	**ND(0.174)**	ND(0.174)	ND(0.174)	ND(0.174)	ND(0.174)	ND(0.174)
BPI-4 (23-25 ft)	02/23/22	ND(0.187)	**ND(0.187)**	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)
BPI-5 (18-20 ft)	02/22/22	ND(0.197) UJ	**ND(0.197) UJ**	ND(0.197) UJ	ND(0.197) UJ	ND(0.197) UJ	0.0258 J	ND(0.197) UJ
BPI-5 (6-8 ft)	02/22/22	ND(0.175) UJ	**ND(0.175) UJ**	ND(0.175) UJ	ND(0.175) UJ	ND(0.175) UJ	0.0237 J	ND(0.175) UJ
BPI-6 (11-13 ft)	02/22/22	ND(0.201) UJ	**ND(0.201) UJ**	ND(0.201) UJ	ND(0.201) UJ	ND(0.201) UJ	0.0262 J	ND(0.201) UJ
BPI-6 (18-20 ft)	02/22/22	ND(0.2) UJ	**ND(0.2) UJ**	ND(0.2) UJ	ND(0.2) UJ	ND(0.2) UJ	0.0256 J	ND(0.2) UJ
BPI-7 (13-15 ft)	02/23/22	ND(0.188)	**ND(0.188)**	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)
BPI-7 (18-20 ft)	02/23/22	ND(0.195)	**ND(0.195)**	ND(0.195)	ND(0.195)	ND(0.195)	ND(0.195)	ND(0.195)
BPI-8 (12-15 ft)	02/23/22	ND(0.226)	**ND(0.226)**	ND(0.226)	ND(0.226)	ND(0.226)	ND(0.226)	ND(0.226)
BPI-8 (18-20 ft)	02/23/22	ND(0.198)	**ND(0.198)**	ND(0.198)	ND(0.198)	ND(0.198)	ND(0.198)	ND(0.198)
BPI-9 (13-15 ft)	02/23/22	ND(0.187)	**ND(0.187)**	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)
BPI-9 (18-20 ft)	02/23/22	ND(0.22)	**ND(0.22)**	ND(0.22)	ND(0.22)	ND(0.22)	ND(0.22)	ND(0.22)
2022 NMED Construction Worker SSL		23,130	23.96	NA	215,200	NA	26,910	NA
2022 NMED Industrial SSL		3,229	3.23	NA	733,000	NA	91,630	NA
2022 NMED Residential SSL		153.1	0.1531	NA	49,310	NA	6,163	NA

Dup - Field duplicate sample
J - Estimated concentration
mg/kg - Milligrams per kilogram
NA - Not applicable
ND - Not detected at the report limit
NMED - New Mexico Environment Department
SSL - Soil Screening Level
SWMU - Solid Waste Management Unit
UJ - Estimated reporting limit

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WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Hexachloro Benzene (mg/kg)	Hexachlorobutadiene (mg/kg)	Hexachlorocyclopentadiene (mg/kg)	Hexachloroethane (mg/kg)	Indeno(1,2,3-cd)pyrene (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.184) UJ	ND(0.184) UJ	ND(0.184) UJ	ND(0.184) UJ	ND(0.184)	ND(0.184) UJ	ND(0.184) UJ
BPI-1 (8-10 ft)	02/22/22	ND(0.185) UJ	ND(0.185) UJ	ND(0.185) UJ	ND(0.185) UJ	ND(0.185)	ND(0.185) UJ	ND(0.185) UJ
BPI-10 (13-15 ft)	02/22/22	ND(0.19) UJ	ND(0.19) UJ	ND(0.19) UJ	ND(0.19) UJ	ND(0.19)	ND(0.19) UJ	ND(0.19) UJ
BPI-10 (18-20 ft)	02/22/22	ND(0.195) UJ	ND(0.195) UJ	ND(0.195) UJ	ND(0.195) UJ	ND(0.195)	ND(0.195) UJ	ND(0.195) UJ
BPI-11 (12-14 ft)	02/22/22	ND(0.209) UJ	ND(0.209) UJ	ND(0.209) UJ	ND(0.209) UJ	ND(0.209)	ND(0.209) UJ	ND(0.209) UJ
BPI-11 (18-20 ft)	02/22/22	ND(0.198) UJ	ND(0.198) UJ	ND(0.198) UJ	ND(0.198) UJ	ND(0.198)	ND(0.198) UJ	ND(0.198) UJ
BPI-12 (10-12 ft)	02/23/22	ND(0.189)	ND(0.189)	ND(0.189)	ND(0.189)	ND(0.189)	ND(0.189)	ND(0.189)
BPI-12 (18-20 ft)	02/23/22	ND(0.213)	ND(0.213)	ND(0.213)	ND(0.213)	ND(0.213)	ND(0.213)	ND(0.213)
BPI-13 (18-20 ft)	02/23/22	ND(0.208)	ND(0.208)	ND(0.208)	ND(0.208)	ND(0.208)	ND(0.208)	ND(0.208)
BPI-13 (8-10 ft)	02/23/22	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.193)	ND(0.193)	ND(0.193)	ND(0.193)	ND(0.193)	ND(0.193)	ND(0.193)
BPI-14 (13-15 ft)	02/23/22	ND(0.194)	ND(0.194)	ND(0.194)	ND(0.194)	ND(0.194)	ND(0.194)	ND(0.194)
BPI-14 (18-20 ft)	02/23/22	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)
BPI-15 (13-15 ft)	02/24/22	ND(0.191)	ND(0.191)	ND(0.191)	ND(0.191)	ND(0.191)	ND(0.191)	ND(0.191)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)
BPI-15 (18-20 ft)	02/24/22	ND(0.197)	ND(0.197)	ND(0.197)	ND(0.197)	ND(0.197)	ND(0.197)	ND(0.197)
BPI-2 (12-14 ft)	02/22/22	ND(0.173) UJ	ND(0.173) UJ	ND(0.173) UJ	ND(0.173) UJ	ND(0.173)	ND(0.173) UJ	ND(0.173) UJ
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.176) UJ	ND(0.176) UJ	ND(0.176) UJ	ND(0.176) UJ	ND(0.176)	ND(0.176) UJ	ND(0.176) UJ
BPI-2 (18-20 ft)	02/22/22	ND(0.191) UJ	ND(0.191) UJ	ND(0.191) UJ	ND(0.191) UJ	ND(0.191)	ND(0.191) UJ	ND(0.191) UJ
BPI-3 (18-20 ft)	02/22/22	ND(0.182) UJ	ND(0.182) UJ	ND(0.182) UJ	ND(0.182) UJ	ND(0.182)	ND(0.182) UJ	ND(0.182) UJ
BPI-3 (8-10 ft)	02/22/22	ND(0.177) UJ	ND(0.177) UJ	ND(0.177) UJ	ND(0.177) UJ	ND(0.177)	ND(0.177) UJ	ND(0.177) UJ
BPI-4 (12-14 ft)	02/23/22	ND(0.174)	ND(0.174)	ND(0.174)	ND(0.174)	ND(0.174)	ND(0.174)	ND(0.174)
BPI-4 (23-25 ft)	02/23/22	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)
BPI-5 (18-20 ft)	02/22/22	ND(0.197) UJ	ND(0.197) UJ	ND(0.197) UJ	ND(0.197) UJ	ND(0.197)	ND(0.197) UJ	ND(0.197) UJ
BPI-5 (6-8 ft)	02/22/22	ND(0.175) UJ	ND(0.175) UJ	ND(0.175) UJ	ND(0.175) UJ	ND(0.175)	ND(0.175) UJ	ND(0.175) UJ
BPI-6 (11-13 ft)	02/22/22	ND(0.201) UJ	ND(0.201) UJ	ND(0.201) UJ	ND(0.201) UJ	ND(0.201)	ND(0.201) UJ	ND(0.201) UJ
BPI-6 (18-20 ft)	02/22/22	ND(0.2) UJ	ND(0.2) UJ	ND(0.2) UJ	ND(0.2) UJ	ND(0.2)	ND(0.2) UJ	ND(0.2) UJ
BPI-7 (13-15 ft)	02/23/22	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)
BPI-7 (18-20 ft)	02/23/22	ND(0.195)	ND(0.195)	ND(0.195)	ND(0.195)	ND(0.195)	ND(0.195)	ND(0.195)
BPI-8 (12-15 ft)	02/23/22	ND(0.226)	ND(0.226)	ND(0.226)	ND(0.226)	ND(0.226)	ND(0.226)	ND(0.226)
BPI-8 (18-20 ft)	02/23/22	ND(0.198)	ND(0.198)	ND(0.198)	ND(0.198)	ND(0.198)	ND(0.198)	ND(0.198)
BPI-9 (13-15 ft)	02/23/22	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)
BPI-9 (18-20 ft)	02/23/22	ND(0.22)	ND(0.22)	ND(0.22)	ND(0.22)	ND(0.22)	ND(0.22)	ND(0.22)
2022 NMED Construction Worker SSL		10,040	10,040	116.7	2,395	867	4,671	239.7
2022 NMED Industrial SSL		33,680	33,680	16.03	52.08	5,492	641.4	32.3
2022 NMED Residential SSL		2,318	2,318	3.328	68.28	2.304	133.1	1.531

Dup - Field duplicate sample
J - Estimated concentration
mg/kg - Milligrams per kilogram
NA - Not applicable
ND - Not detected at the report limit
NMED - New Mexico Environment Department
SSL - Soil Screening Level
SWMU - Solid Waste Management Unit
UJ - Estimated reporting limit

Notes:
1. Bold text indicates results that exceed the NMED Construction Worker, Industrial, and/or Residential SSLs.

TABLE 2. SEMIVOLATILE ORGANIC COMPOUND DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Isophorone (mg/kg)	Naphthalene (mg/kg)	Nitrobenzene (mg/kg)	N-Nitrosodin-propylamine (mg/kg)	N-Nitrosodiphenylamine (mg/kg)	Pentachlorophenol (mg/kg)	Phenanthrene (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.184) UJ	ND(0.184) UJ	ND(0.184) UJ	ND(0.184) UJ	ND(0.184) UJ	ND(0.368)	ND(0.184) UJ
BPI-1 (8-10 ft)	02/22/22	ND(0.185) UJ	ND(0.185) UJ	ND(0.185) UJ	ND(0.185) UJ	ND(0.185) UJ	ND(0.37)	ND(0.185) UJ
BPI-10 (13-15 ft)	02/22/22	ND(0.19) UJ	ND(0.19) UJ	ND(0.19) UJ	ND(0.19) UJ	ND(0.19) UJ	ND(0.379)	ND(0.19) UJ
BPI-10 (18-20 ft)	02/22/22	ND(0.195) UJ	ND(0.195) UJ	ND(0.195) UJ	ND(0.195) UJ	ND(0.195) UJ	ND(0.39)	ND(0.195) UJ
BPI-11 (12-14 ft)	02/22/22	ND(0.209) UJ	ND(0.209) UJ	ND(0.209) UJ	ND(0.209) UJ	ND(0.209) UJ	ND(0.417)	ND(0.209) UJ
BPI-11 (18-20 ft)	02/22/22	ND(0.198) UJ	ND(0.198) UJ	ND(0.198) UJ	ND(0.198) UJ	ND(0.198) UJ	ND(0.396)	ND(0.198) UJ
BPI-12 (10-12 ft)	02/23/22	ND(0.189)	ND(0.189)	ND(0.189)	ND(0.189)	ND(0.189)	ND(0.377)	ND(0.189)
BPI-12 (18-20 ft)	02/23/22	ND(0.213)	ND(0.213)	ND(0.213)	ND(0.213)	ND(0.213)	ND(0.425)	ND(0.213)
BPI-13 (18-20 ft)	02/23/22	ND(0.208)	ND(0.208)	ND(0.208)	ND(0.208)	ND(0.208)	ND(0.416)	ND(0.208)
BPI-13 (8-10 ft)	02/23/22	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.385)	ND(0.192)
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.193)	ND(0.193)	ND(0.193)	ND(0.193)	ND(0.193)	ND(0.387)	ND(0.193)
BPI-14 (13-15 ft)	02/23/22	ND(0.194)	ND(0.194)	ND(0.194)	ND(0.194)	ND(0.194)	ND(0.388)	ND(0.194)
BPI-14 (18-20 ft)	02/23/22	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.375)	ND(0.188)
BPI-15 (13-15 ft)	02/24/22	ND(0.191)	ND(0.191)	ND(0.191)	ND(0.191)	ND(0.191)	ND(0.381)	ND(0.191)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.192)	ND(0.383)	ND(0.192)
BPI-15 (18-20 ft)	02/24/22	ND(0.197)	ND(0.197)	ND(0.197)	ND(0.197)	ND(0.197)	ND(0.393)	ND(0.197)
BPI-2 (12-14 ft)	02/22/22	ND(0.173) UJ	ND(0.173) UJ	ND(0.173) UJ	ND(0.173) UJ	ND(0.173) UJ	ND(0.347)	ND(0.173) UJ
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.176) UJ	ND(0.176) UJ	ND(0.176) UJ	ND(0.176) UJ	ND(0.176) UJ	ND(0.353)	ND(0.176) UJ
BPI-2 (18-20 ft)	02/22/22	ND(0.191) UJ	ND(0.191) UJ	ND(0.191) UJ	ND(0.191) UJ	ND(0.191) UJ	ND(0.383)	ND(0.191) UJ
BPI-3 (18-20 ft)	02/22/22	ND(0.182) UJ	ND(0.182) UJ	ND(0.182) UJ	ND(0.182) UJ	ND(0.182) UJ	ND(0.365)	ND(0.182) UJ
BPI-3 (8-10 ft)	02/22/22	ND(0.177) UJ	ND(0.177) UJ	ND(0.177) UJ	ND(0.177) UJ	ND(0.177) UJ	ND(0.354)	ND(0.177) UJ
BPI-4 (12-14 ft)	02/23/22	ND(0.174)	ND(0.174)	ND(0.174)	ND(0.174)	ND(0.174)	ND(0.348)	ND(0.174)
BPI-4 (23-25 ft)	02/23/22	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.373)	ND(0.187)
BPI-5 (18-20 ft)	02/22/22	ND(0.197) UJ	ND(0.197) UJ	ND(0.197) UJ	ND(0.197) UJ	ND(0.197) UJ	ND(0.394)	ND(0.197) UJ
BPI-5 (6-8 ft)	02/22/22	ND(0.175) UJ	ND(0.175) UJ	ND(0.175) UJ	ND(0.175) UJ	ND(0.175) UJ	ND(0.349)	ND(0.175) UJ
BPI-6 (11-13 ft)	02/22/22	ND(0.201) UJ	ND(0.201) UJ	ND(0.201) UJ	ND(0.201) UJ	ND(0.201) UJ	ND(0.403)	ND(0.201) UJ
BPI-6 (18-20 ft)	02/22/22	ND(0.2) UJ	ND(0.2) UJ	ND(0.2) UJ	ND(0.2) UJ	ND(0.2) UJ	ND(0.4)	ND(0.2) UJ
BPI-7 (13-15 ft)	02/23/22	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.188)	ND(0.376)	ND(0.188)
BPI-7 (18-20 ft)	02/23/22	ND(0.195)	ND(0.195)	ND(0.195)	ND(0.195)	ND(0.195)	ND(0.39)	ND(0.195)
BPI-8 (12-15 ft)	02/23/22	ND(0.226)	ND(0.226)	ND(0.226)	ND(0.226)	ND(0.226)	ND(0.452)	ND(0.226)
BPI-8 (18-20 ft)	02/23/22	ND(0.198)	ND(0.198)	ND(0.198)	ND(0.198)	ND(0.198)	ND(0.395)	ND(0.198)
BPI-9 (13-15 ft)	02/23/22	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.187)	ND(0.374)	ND(0.187)
BPI-9 (18-20 ft)	02/23/22	ND(0.22)	ND(0.22)	ND(0.22)	ND(0.22)	ND(0.22)	ND(0.44)	ND(0.22)
2022 NMED Construction Worker SSL		198,300	632.9	1,353	NA	37,860	346.2	8,072
2022 NMED Industrial SSL		27,010	108.2	293.3	NA	5,236	44.51	27,490
2022 NMED Residential SSL		5,606	22.6	60.43	NA	1,087	9.855	1,849

Dup - Field duplicate sample
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Notes:
1. Bold text indicates results that exceed the NMED Construction Worker, Industrial, and/or Residential SSLs.

TABLE 2. SEMIVOLATILE ORGANIC COMPOUND DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Phenol (mg/kg)	Pyrene (mg/kg)	Pyridine (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(0.368)	ND(0.184) UJ	ND(0.368) UJ
BPI-1 (8-10 ft)	02/22/22	ND(0.37)	ND(0.185) UJ	ND(0.37) UJ
BPI-10 (13-15 ft)	02/22/22	ND(0.379)	ND(0.19) UJ	ND(0.379) UJ
BPI-10 (18-20 ft)	02/22/22	ND(0.39)	ND(0.195) UJ	ND(0.39) UJ
BPI-11 (12-14 ft)	02/22/22	ND(0.417)	ND(0.209) UJ	ND(0.417) UJ
BPI-11 (18-20 ft)	02/22/22	ND(0.396)	ND(0.198) UJ	ND(0.396) UJ
BPI-12 (10-12 ft)	02/23/22	ND(0.377)	ND(0.189)	ND(0.377)
BPI-12 (18-20 ft)	02/23/22	ND(0.425)	ND(0.213)	ND(0.425)
BPI-13 (18-20 ft)	02/23/22	ND(0.416)	ND(0.208)	ND(0.416)
BPI-13 (8-10 ft)	02/23/22	ND(0.385)	ND(0.192)	ND(0.385)
BPI-13 (8-10 ft) Dup	02/23/22	ND(0.387)	ND(0.193)	ND(0.387)
BPI-14 (13-15 ft)	02/23/22	ND(0.388)	ND(0.194)	ND(0.388)
BPI-14 (18-20 ft)	02/23/22	ND(0.375)	ND(0.188)	ND(0.375)
BPI-15 (13-15 ft)	02/24/22	ND(0.381)	ND(0.191)	ND(0.381)
BPI-15 (13-15 ft) Dup	02/24/22	ND(0.383)	ND(0.192)	ND(0.383)
BPI-15 (18-20 ft)	02/24/22	ND(0.393)	ND(0.197)	ND(0.393)
BPI-2 (12-14 ft)	02/22/22	ND(0.347)	ND(0.173) UJ	ND(0.347) UJ
BPI-2 (12-14 ft) Dup	02/22/22	ND(0.353)	ND(0.176) UJ	ND(0.353) UJ
BPI-2 (18-20 ft)	02/22/22	ND(0.383)	ND(0.191) UJ	ND(0.383) UJ
BPI-3 (18-20 ft)	02/22/22	ND(0.365)	ND(0.182) UJ	ND(0.365) UJ
BPI-3 (8-10 ft)	02/22/22	ND(0.354)	ND(0.177) UJ	ND(0.354) UJ
BPI-4 (12-14 ft)	02/23/22	ND(0.348)	ND(0.174)	ND(0.348)
BPI-4 (23-25 ft)	02/23/22	ND(0.373)	ND(0.187)	ND(0.373)
BPI-5 (18-20 ft)	02/22/22	ND(0.394)	ND(0.197) UJ	ND(0.394) UJ
BPI-5 (6-8 ft)	02/22/22	ND(0.349)	ND(0.175) UJ	ND(0.349) UJ
BPI-6 (11-13 ft)	02/22/22	ND(0.403)	ND(0.201) UJ	ND(0.403) UJ
BPI-6 (18-20 ft)	02/22/22	ND(0.4)	ND(0.2) UJ	ND(0.4) UJ
BPI-7 (13-15 ft)	02/23/22	ND(0.376)	ND(0.188)	ND(0.376)
BPI-7 (18-20 ft)	02/23/22	ND(0.39)	ND(0.195)	ND(0.39)
BPI-8 (12-15 ft)	02/23/22	ND(0.452)	ND(0.226)	ND(0.452)
BPI-8 (18-20 ft)	02/23/22	ND(0.395)	ND(0.198)	ND(0.395)
BPI-9 (13-15 ft)	02/23/22	ND(0.374)	ND(0.187)	ND(0.374)
BPI-9 (18-20 ft)	02/23/22	ND(0.44)	ND(0.22)	ND(0.44)
2022 NMED Construction Worker SSL		77,380	7,530	NA
2022 NMED Industrial SSL		274,900	25,260	NA
2022 NMED Residential SSL		18,490	1,738	NA

Dup - Field duplicate sample
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SWMU - Solid Waste Management Unit
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Notes:
1. Bold text indicates results that exceed the NMED Construction Worker, Industrial, and/or Residential SSLs.

TABLE 3. METALS DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Antimony, Total (mg/kg)	Arsenic, Total (mg/kg)	Barium, Total (mg/kg)	Beryllium, Total (mg/kg)	Cadmium, Total (mg/kg)	Chromium, Total (mg/kg)	Cobalt, Total (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(2.09)	ND(1.04)	127	1.13	ND(1.04)	8.75	4.23
BPI-1 (8-10 ft)	02/22/22	1.01 J	ND(0.977)	176	1.63	ND(0.977)	15.4	5.88
BPI-10 (13-15 ft)	02/22/22	ND(1.97)	ND(0.986)	152	1.39	ND(0.986)	7.79	4.62
BPI-10 (18-20 ft)	02/22/22	ND(2.18)	ND(1.09)	184	1.26	ND(1.09)	14.4	4.88
BPI-11 (12-14 ft)	02/22/22	1.03 J	ND(1.05)	67.2	1.37	ND(1.05)	11.1	4.97
BPI-11 (18-20 ft)	02/22/22	0.844 J	ND(1.13)	98	1.18	ND(1.13)	10.9	4.58
BPI-12 (10-12 ft)	02/23/22	ND(2.1)	0.588J B/ND(1.05)U*	154	1.55	ND(1.05)	19.5	5.97
BPI-12 (18-20 ft)	02/23/22	0.534 J	0.67J B/ND(1.18)U*	104	1.4	ND(1.18)	15.9	5.9
BPI-13 (18-20 ft)	02/23/22	ND(2.45)	ND(1.23)	153	1.46	ND(1.23)	9.77	5.67
BPI-13 (8-10 ft)	02/23/22	ND(2.31)	1.48 JB	50.2 J	1.26	ND(1.15)	8.42	4.1
BPI-13 (8-10 ft) Dup	02/23/22	ND(2.27)	1.25 JB	154 J	1.07	ND(1.14)	6.76	3.68
BPI-14 (13-15 ft)	02/23/22	1.29 J	0.769J B/ND(1.14)U*	130	1.3	ND(1.14)	12.5	4.78
BPI-14 (18-20 ft)	02/23/22	ND(1.94)	1.07 JB	291	1.31	ND(0.971)	13.9	5.19
BPI-15 (13-15 ft)	02/24/22	ND(2.01)	1.42 JB	161 J	1.18	ND(1)	9.26	4.26
BPI-15 (13-15 ft) Dup	02/24/22	ND(2.02)	ND(1.01)	347 J	0.823	ND(1.01)	7.37	3.7
BPI-15 (18-20 ft)	02/24/22	ND(2.32)	0.523J B/ND(1.16)U*	124	1.21	ND(1.16)	9.41	4.59
BPI-2 (12-14 ft)	02/22/22	ND(1.95)	2.03 JB	334	1.09	ND(0.975)	7.09	3.55
BPI-2 (12-14 ft) Dup	02/22/22	ND(1.94)	0.947J B/ND(0.97)U*	216	0.951	ND(0.97)	7.3	3.31
BPI-2 (18-20 ft)	02/22/22	ND(2.04)	0.946J B/ND(1.02)U*	195	0.807	ND(1.02)	6.32	3.2
BPI-3 (18-20 ft)	02/22/22	ND(2.23)	ND(1.12)	235	1.6	ND(1.12)	11.9	5.53
BPI-3 (8-10 ft)	02/22/22	ND(1.93)	ND(0.966)	274	0.988	ND(0.966)	9.47	3.91
BPI-4 (12-14 ft)	02/23/22	ND(1.87)	ND(0.934)	249	0.568	ND(0.934)	1.76	3.28
BPI-4 (23-25 ft)	02/23/22	1.1 J	1.14 JB	107	0.899	ND(1.1)	6.37	3.43
BPI-5 (18-20 ft)	02/22/22	ND(2.14)	ND(1.07)	239	1.28	ND(1.07)	13.5	5.45
BPI-5 (6-8 ft)	02/22/22	ND(2.1)	1.91 JB	542	0.544	ND(1.05)	2.37	2.53
BPI-6 (11-13 ft)	02/22/22	ND(2.21)	1.43 JB	85	1.21	ND(1.1)	10.9	4.33
BPI-6 (18-20 ft)	02/22/22	ND(2.28)	ND(1.14)	204	1.21	ND(1.14)	10.2	4.81
BPI-7 (13-15 ft)	02/23/22	0.519 J	ND(1.13)	67.6	1.04	ND(1.13)	6.87	3.43
BPI-7 (18-20 ft)	02/23/22	ND(2.34)	1.13J B/ND(1.17)U*	233	1.25	ND(1.17)	7.57	3.92
BPI-8 (12-15 ft)	02/23/22	ND(2.61)	ND(1.3)	503	0.596	ND(1.3)	1.39	3.64
BPI-8 (18-20 ft)	02/23/22	0.87 J	2.75 JB	519	1.37	ND(1.02)	9.36	8.73
BPI-9 (13-15 ft)	02/23/22	ND(2.08)	1.17 JB	34.5	1.13	ND(1.04)	7.09	3.6
BPI-9 (18-20 ft)	02/23/22	ND(2.54)	1.11J B/ND(1.27)U*	108	0.762	ND(1.27)	5.11	2.85
2022 NMED Construction Worker SSL		141.6	215.6	4,392	2,707	3,609	468.3	721.8
2022 NMED Industrial SSL		519.1	35.88	254,700	312,600	416,800	504.6	83,360
2022 NMED Residential SSL		31.29	7.075	15,560	64,410	85,880	96.6	17,180

Dup - Field duplicate sample
J - Estimated concentration
JB - Estimated concentration due to blank contamination
mg/kg - Milligrams per kilogram
NA - Not applicable
ND - Not detected at the reporting limit
NMED - New Mexico Environment Department
SSL - Soil Screening Level
SWMU - Solid Waste Management Unit
U - Evaluated to be undetected at the reporting limit

Notes:
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 3. METALS DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Lead, Total (mg/kg)	Mercury, Total (mg/kg)	Nickel, Total (mg/kg)	Selenium, Total (mg/kg)	Silver, Total (mg/kg)	Vanadium, Total (mg/kg)	Zinc, Total (mg/kg)
BPI-1 (18-20 ft)	02/22/22	10.4	ND(0.0212)	8.17	ND(3.13)	ND(2.09)	13.9	13.4
BPI-1 (8-10 ft)	02/22/22	13.9	ND(0.021)	12.4	ND(2.93)	ND(1.95)	18.3	43.8
BPI-10 (13-15 ft)	02/22/22	12.8	0.00538 J	8.89	ND(2.96)	ND(1.97)	13.1	37.2
BPI-10 (18-20 ft)	02/22/22	10.8	0.00569 J	10.4	ND(3.27)	ND(2.18)	16.7	19.2
BPI-11 (12-14 ft)	02/22/22	14.6	0.00549 J	9.87	ND(3.15)	ND(2.1)	14.5	26.4
BPI-11 (18-20 ft)	02/22/22	9.86	0.00417 J	9.53	ND(3.4)	ND(2.27)	14.1	103
BPI-12 (10-12 ft)	02/23/22	12.5	ND(0.0199)	11.6	ND(3.15)	ND(2.1)	24.3	20.2
BPI-12 (18-20 ft)	02/23/22	11.3	ND(0.0246)	11	ND(3.55)	ND(2.37)	19.1	80.5
BPI-13 (18-20 ft)	02/23/22	12.9	0.005 J	9.49	ND(3.68)	ND(2.45)	13.1	15.4
BPI-13 (8-10 ft)	02/23/22	11.7	ND(0.021)	8.38	ND(3.46)	ND(2.31)	12.9	46.1 J
BPI-13 (8-10 ft) Dup	02/23/22	9.78	ND(0.0232)	7.5	ND(3.41)	ND(2.27)	10	21.1 J
BPI-14 (13-15 ft)	02/23/22	10.3	ND(0.022)	8.97	ND(3.42)	ND(2.28)	16.5	18.1
BPI-14 (18-20 ft)	02/23/22	10.7	ND(0.0198)	9.22	ND(2.91)	ND(1.94)	20.2	20.8
BPI-15 (13-15 ft)	02/24/22	9.86	ND(0.0225)	8.19	ND(3.01)	ND(2.01)	13.4	13.8 J
BPI-15 (13-15 ft) Dup	02/24/22	6.52	ND(0.0217)	5.52	ND(3.03)	ND(2.02)	10.5	23.2 J
BPI-15 (18-20 ft)	02/24/22	11	ND(0.0232)	8.84	ND(3.48)	ND(2.32)	12.9	15.9
BPI-2 (12-14 ft)	02/22/22	10.3	0.00423 J	7.08	ND(2.92)	ND(1.95)	13.6	10.8
BPI-2 (12-14 ft) Dup	02/22/22	9.55	0.00503 J	6.18	ND(2.91)	ND(1.94)	11.4	9.41
BPI-2 (18-20 ft)	02/22/22	7.94	ND(0.0208)	5.92	ND(3.06)	ND(2.04)	13.2	10.1
BPI-3 (18-20 ft)	02/22/22	14.3	0.00647 J	11.2	ND(3.35)	ND(2.23)	15.3	18
BPI-3 (8-10 ft)	02/22/22	11.3	ND(0.0187)	7.49	ND(2.9)	ND(1.93)	17.2	12.4
BPI-4 (12-14 ft)	02/23/22	5.48	ND(0.0187)	3.61	ND(2.8)	ND(1.87)	12.2	94.3
BPI-4 (23-25 ft)	02/23/22	8.22	ND(0.0224)	6.43	ND(3.29)	ND(2.2)	12.6	9.69
BPI-5 (18-20 ft)	02/22/22	12.1	0.00876 J	11.2	ND(3.21)	ND(2.14)	17.4	17.8
BPI-5 (6-8 ft)	02/22/22	8.29	0.00422 J	3.32	ND(3.15)	ND(2.1)	19.8	8.12
BPI-6 (11-13 ft)	02/22/22	12	ND(0.0233)	8.78	ND(3.31)	ND(2.21)	14.3	14
BPI-6 (18-20 ft)	02/22/22	11.4	0.00592 J	9.88	ND(3.41)	ND(2.28)	13.9	15.7
BPI-7 (13-15 ft)	02/23/22	9.98	ND(0.0225)	6.86	ND(3.38)	ND(2.25)	12.4	11.1
BPI-7 (18-20 ft)	02/23/22	9.97	ND(0.0205)	7.28	ND(3.51)	ND(2.34)	12.1	13
BPI-8 (12-15 ft)	02/23/22	8.06	ND(0.0246)	3.11	ND(3.91)	ND(2.61)	9.28	9.85
BPI-8 (18-20 ft)	02/23/22	14.9	ND(0.0216)	10.7	ND(3.07)	ND(2.05)	16.9	13.8
BPI-9 (13-15 ft)	02/23/22	10.2	0.00891 J	7.07	ND(3.12)	ND(2.08)	10.7	10
BPI-9 (18-20 ft)	02/23/22	8.16	ND(0.0245)	4.94	0.877 J	ND(2.54)	10.6	53.9
2022 NMED Construction Worker SSL		800	NA	24,980	1,753	1,770	614.1	106,200
2022 NMED Industrial SSL		800	NA	2,886,000	6,489	6,489	6,525	389,300
2022 NMED Residential SSL		400	NA	594,600	391.1	391.1	393.9	23,460

Dup - Field duplicate sample
J - Estimated concentration
JB - Estimated concentration due to blank contamination
mg/kg - Milligrams per kilogram
NA - Not applicable
ND - Not detected at the reporting limit
NMED - New Mexico Environment Department
SSL - Soil Screening Level
SWMU - Solid Waste Management Unit
U - Evaluated to be undetected at the reporting limit

Notes:
* - The first result represents the laboratory reported concentration. The second result was evaluated to be undetected at the reported concentration by the data validator. The result was determined to be a false positive.

TABLE 4. GENERAL CHEMISTRY DATA SUMMARY
BORROW PIT BERM INVESTIGATION FOR SWMU 1 BACKFILL
WESTERN REFINING SOUTHWEST LLC D/B/A MARATHON GALLUP REFINERY, GALLUP, NEW MEXICO

Location ID	Date Sampled	Oil Range Organics (mg/kg)	Diesel Range Organics (mg/kg)	Gasoline Range Organics (mg/kg)
BPI-1 (18-20 ft)	02/22/22	ND(85.3)	ND(85.3)	**236**
BPI-1 (8-10 ft)	02/22/22	ND(70.5)	ND(70.5)	ND(70.5)
BPI-10 (13-15 ft)	02/22/22	ND(59.5)	ND(59.5)	**132**
BPI-10 (18-20 ft)	02/22/22	ND(48.8)	ND(48.8)	**202**
BPI-11 (12-14 ft)	02/22/22	ND(58.5)	ND(58.5)	**236**
BPI-11 (18-20 ft)	02/22/22	ND(52.9)	ND(52.9)	**214**
BPI-12 (10-12 ft)	02/23/22	ND(53.1)	ND(53.1)	ND(53.1)
BPI-12 (18-20 ft)	02/23/22	ND(48.5)	ND(48.5)	ND(48.5)
BPI-13 (18-20 ft)	02/23/22	ND(49.1)	ND(49.1)	ND(49.1)
BPI-13 (8-10 ft)	02/23/22	ND(60.6)	ND(60.6)	ND(60.6)
BPI-13 (8-10 ft) Dup	02/23/22	ND(64.9)	ND(64.9)	ND(64.9)
BPI-14 (13-15 ft)	02/23/22	ND(57.6)	ND(57.6)	ND(57.6)
BPI-14 (18-20 ft)	02/23/22	ND(59.8)	ND(59.8)	ND(59.8)
BPI-15 (13-15 ft)	02/24/22	ND(80.8)	ND(80.8)	ND(80.8)
BPI-15 (13-15 ft) Dup	02/24/22	ND(58.8)	ND(58.8)	ND(58.8)
BPI-15 (18-20 ft)	02/24/22	ND(55.5)	ND(55.5)	ND(55.5)
BPI-2 (12-14 ft)	02/22/22	ND(68.1)	ND(68.1)	**125**
BPI-2 (12-14 ft) Dup	02/22/22	ND(66)	ND(66)	**142**
BPI-2 (18-20 ft)	02/22/22	ND(72.9)	ND(72.9)	**299**
BPI-3 (18-20 ft)	02/22/22	ND(80.5)	ND(80.5)	**334**
BPI-3 (8-10 ft)	02/22/22	ND(56.5)	ND(56.5)	**233**
BPI-4 (12-14 ft)	02/23/22	ND(48.5)	ND(48.5)	ND(48.5)
BPI-4 (23-25 ft)	02/23/22	ND(45.8)	ND(45.8)	ND(45.8)
BPI-5 (18-20 ft)	02/22/22	ND(52.6)	ND(52.6)	ND(52.6)
BPI-5 (6-8 ft)	02/22/22	ND(67.5)	ND(67.5)	**282**
BPI-6 (11-13 ft)	02/22/22	ND(51.8)	ND(51.8)	ND(51.8)
BPI-6 (18-20 ft)	02/22/22	ND(53.1)	ND(53.1)	ND(53.1)
BPI-7 (13-15 ft)	02/23/22	ND(72.4)	ND(72.4)	ND(72.4)
BPI-7 (18-20 ft)	02/23/22	ND(70.8)	ND(70.8)	ND(70.8)
BPI-8 (12-15 ft)	02/23/22	ND(86.4)	ND(86.4)	ND(86.4)
BPI-8 (18-20 ft)	02/23/22	ND(68.1)	ND(68.1)	ND(68.1)
BPI-9 (13-15 ft)	02/23/22	ND(63.1)	ND(63.1)	ND(63.1)
BPI-9 (18-20 ft)	02/23/22	ND(73.5)	ND(73.5)	ND(73.5)
2022 NMED Construction Worker SSL		NA	3,000	500
2022 NMED Industrial SSL		NA	3,000	500
2022 NMED Residential SSL		NA	1,000	100

Dup - Field duplicate sample
mg/kg - Milligrams per kilogram
NA - Not applicable
ND - Not detected at the reporting limit
NMED - New Mexico Environment Department
SSL - Soil Screening Level
SWMU - Solid Waste Management Unit

Notes:
1. Bold text indicates results that exceed the NMED Construction Worker, Industrial, and/or Residential SSLs

Appendix D – Disposal Management Plan

WESTERN REFINING SOUTHWEST LLC, D/B/A

MARATHON GALLUP REFINERY

SWMU-1 DISPOSAL MANAGEMENT PLAN

MARCH 15, 2023

Table of Contents

Acronyms

ABTU	aggressive biological treatment unit
AL	aeration lagoon
CFR	Code of Federal Regulations
CMIWP	Corrective Measures Implementation Work Plan
DMP	Disposal Management Plan
EP	evaporation pond
EPA	Environmental Protection Agency
ft	foot or feet
ft^2	square feet
HWB	Hazardous Waste Bureau
I-40	Interstate 40
MPC	Marathon Petroleum Corporation
NLCI	No Longer Contained In
NM	New Mexico
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
RCRA	Resource Conservation and Recovery Act
Refinery	Marathon Gallup Refinery
RRRL	Red Rocks Regional Landfill
SWB	Solid Waste Bureau
SWMU	solid waste management unit
SWR	Solid Waste Rules
TCLP	toxicity characteristic leaching procedure

Acronyms (continued)

Trihydro	Trihydro Corporation
USET	US Ecology Texas
yds^3	cubic yards

1.0 Generating Facility

Trihydro Corporation (Trihydro) has prepared this Disposal Management Plan (DMP) for corrective measures activities for Solid Waste Management Unit SWMU-1 (SWMU-1) for Western Refining Southwest LLC D/B/A the Marathon Gallup Refinery (Refinery). This DMP comprises Appendix D to the SWMU-1 Corrective Measures Implementation Work Plan (CMIWP). This DMP is prepared for review and approval by the New Mexico Environmental Department (NMED), Solid Waste Bureau (SWB) in accordance with the special waste requirements for sludge as addressed under the New Mexico Solid Waste Rules (SWR) 20.9.8.16 of the New Mexico Administrative Code (NMAC) (NMAC 2007a) .

The Refinery is located approximately 17 miles east of Gallup, McKinley County, New Mexico (NM) along the north side of Interstate 40 (I-40) (CMIWP - Figure 1-1). The Refinery has been indefinitely idled since August 2020. The Refinery maintains compliance under the Resource Conservation and Recovery Act (RCRA) Post-Closure Care Permit No. NM000333211 (NMED 2022a).

SWMU-1 consists of two former aeration lagoons (AL-1 and AL-2) and an evaporation pond (EP-1) (CMIWP – Figure 1-2). AL-1 and AL-2 were formerly operated as an aggressive biological treatment unit (ABTU) for the treatment of Refinery wastewater. Following ABTU treatment, water flowed by gravity to EP-1 for initial evaporation, followed by gravity flow to several downstream evaporation ponds. SWMU-1 was constructed in 1987 and operated until 2013, when it was replaced by the current system.

The lagoons served as primary and secondary separation of petroleum refinery wastewater and therefore by definition contains primary and secondary sludges (F037/F038) which is listed hazardous waste unless aggressive biological treatment is used. There were documented failures of the aerators therefore sediments contained in AL-1 and AL-2 may contain a listed hazardous waste. Additionally, based on sampling conducted EP-1 sediments do not likely contain a characteristic hazardous waste. However, NMED Hazardous Waste Bureau (HWB) has documented that releases of listed hazardous waste into EP-1 may have occurred (NMED 2022b). Therefore, Marathon Petroleum Company (MPC) has requested a No Longer Contained-In (NLCI) determination (MPC 2022a) to manage the sludges and soil removed from SWMU-1 as non-hazardous or as a special waste. NMED issued an Approval with Modifications for the request (NMED 2022c) and responses to comments were submitted by MPC (MPC 2022b). As a result, SWMU-1 waste will be sampled post-excavation and will be managed accordingly (i.e., hazardous or nonhazardous per comparison of analytical data against regulatory criteria provided in Title 40, Code of Federal Regulations Part 261 – Identification and Listing of Hazardous Waste).

The area of the lagoons and pond were determined using CADD software. Volumes for excavation and disposal were estimated using the areas and the average depth of contamination, and then rounded to the nearest 100 cubic yards (yds^3), with resulting sludge volumes as follows (MPC 2021a):

- AL-1: Average depth 5.2 feet (ft), surface area 13,789 square feet (ft^2), volume 2,700 yds^3.
- AL-2: Average depth 5.3 ft, surface area 23,211 ft^2, volume 4,500 yds^3.
- EP-1: Average depth 5.3 ft, surface area 58,757 ft^2, volume 11,500 yds^3.

The volumes listed above will be augmented with clean fill to stabilize the sludge for transport and disposal. The volume of fill required will be determined with input from the receiving disposal facility. The Refinery understands that the actual volumes for excavation and disposal may change based on field observations and confirmation sampling during the excavation activities.

2.0 Facility Information

Information regarding the Refinery ownership is below:

Owner/Operator:	Western Refining Southwest LLC 92 Giant Crossing Road Gallup, New Mexico 87301	(Postal Address)
	Western Refining Southwest LLC I-40, Exit 39 Jamestown, New Mexico 87347	(Physical Address)

3.0 Disposal Facilities

The potential for both nonhazardous and hazardous waste streams necessitate the use of two disposal facilities as listed below.

Nonhazardous Waste

Pursuant to 20.9:8.16 N1V1AC-Sludge (NMAC 2007a), the Refinery is requesting NMED approval to transport and dispose of stabilized nonhazardous sludge at the Red Rocks Regional Landfill (RRRL), located at 101 Red Mesa Bluffs Drive, Thoreau, New Mexico. This facility is permitted to receive municipal sludge and Special Waste under permit number SWM-051740(SP) and is operated by Northwest New Mexico Regional Solid Waste Authority. The sludge will be disposed of in accordance with current landfill operations. Discussions are ongoing with RRRL to ensure their awareness of the nature of the sludge, the estimated disposal quantity, the required sampling frequency and the parameters for testing of the sludge. Documentation of RRRL's acceptance of the sludge and this DMP into their facility records and operations will be provided to the SWB prior to the shipment of the sludge.

Hazardous Waste

Pursuant to 20.9:8.16 N1V1AC-Sludge (NMAC 2007a), the Refinery is requesting NMED approval to transport and dispose of stabilized characteristically hazardous sludge at the US Ecology Texas (USET) facility, located at 3277 County Road 69, Robstown, Texas. This facility is permitted to receive hazardous and nonhazardous waste for treatment and on-site landfill disposal. The facility operates under Permit No. 50052 under Texas Administrative Code Section 361, Chapter 26. Hazardous sludge will undergo thermal treatment prior to disposal in accordance with the landfill operations with approval of NMED's HWB.

4.0 Travel Routes

Travel routes to the two potential disposal facilities are provided below.

4.1 Truck Route to Red Rocks Regional Landfill

From the Refinery, travel west and south on Giant Crossing Road to I-40. Turn east on the frontage road to enter eastbound I-40. Proceed on I-40 east for approximately 13 miles to Exit 53 (NM Highway 371). Turn left and proceed northeast through Thoreau, NM on Highway 371 approximately 5.2 miles to Red Mesa Bluffs Drive. Follow the drive to the RRRL gate. A route map is provided in Attachment A.

4.2 Travel Route to US Ecology Texas Robstown Facility

The travel route to the USET facility is approximately 970 miles and may be traversed over multiple routes. The mode of transportation may include either truck or rail transport. The transport mode will likely be dependent on the volume of sludge that is characteristically hazardous depending on post-excavation sampling. The Refinery will coordinate the appropriate transportation and will provide notice in advance to NMED.

5.0 Transportation to Disposal Facilities

A registered waste hauler will be used to transport the sludge to the appropriate disposal facility. The waste hauler will be identified during the contractor bidding process. The identity of the proposed hauler will be provided to the SWB at least 10 days prior to the commencement of hauling.

The stabilized waste will be transported in a leak-free and covered trailer. Each load will have a Waste Manifest (see Attachment B), which meets the requirements specified in Section 20.9.8.19 NMAC (NMAC 2007b). The original and signed copies of the manifest will be kept on file at the Refinery for a minimum of at least three years, as per Section 20.9.8.19 NMAC (NMAC 2007b).

6.0 Waste Sampling and Analysis

Post-excavation waste sampling will be conducted to confirm the waste excavated from SWMU-1 are not a hazardous waste as outlined in the NLCI response (MPC 2022b). The excavated soils will be temporarily stockpiled into multiple separate piles within the Stockpile Area in SWMU-1. The stockpiles will be in a segregated stockpile area and managed in accordance with the temporary storage requirements of NMAC 20.9.8 (NMAC 2007c), and not stored for longer than 90 days from the date the waste is placed in storage awaiting transportation, processing, or final disposal, unless the material is determined to be non-hazardous through sampling or otherwise approved by the NMED SWB.

Sampling frequency for purposes of NLCI verification will be one (1) 5-point composite sample per 250 yds^3 stockpiled in accordance with HWB requirements (NMED 2022b). Composite samples will be analyzed for the following:

1. No free liquids as determined by paint filter liquids test (Environmental Protection Agency [EPA] test method 9095, November 2004), unless exempt in accordance with 20.9.4.17 NMAC (2007d)
2. Percent solids (no specified limits)
3. pH, within the range of 2.0 to 12.5
4. Polychlorinated biphenyls *less than 50 milligrams per Kilogram*
5. Toxicity characteristic leaching procedure (TCLP) (EPA test method 1311, July 1992) that were detected as listed in Table 2 (CMIWP)
6. Volatile organic compounds
7. Semi-volatile organic compounds
8. Total petroleum hydrocarbons
    a. Gasoline range organics
    b. Diesel range organics
    c. Oil range organics
9. Ignitability
10. Corrosivity
11. All other waste acceptance criteria required by the designated landfill.

Post-excavation composite sample analytical results for each stockpile will be compared to TCLP screening levels and the designated landfill requirements. If the sampling analysis confirms that the excavated soil is not

characteristically hazardous waste and the concentration of hazardous waste constituents do not present a threat to human health and the environment after placement in a nonhazardous waste disposal facility (i.e., the two NLCI criteria), the waste will be managed as a Special Waste per this DMP. If any post-excavation sampling results in values above hazardous waste TCLP screening levels, said waste will be segregated and managed per NMED requirements (NMAC 2007c).

The laboratory selected to perform the sludge analyses will be selected during the bidding process that will occur in the 1st or 2nd quarter of 2023. The laboratory contact information will be provided in advance of sludge sampling activities.

7.0 Contingency Plan

The registered waste hauler selected via the SWMU-1 bidding process will develop the Contingency Plan to address an unplanned release or spill of the stabilized sludge. The Contingency Plan will be submitted to the SWB under a separate submittal which will be submitted at least 10 days prior to commencement of hauling of material.

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8.0 Future Waste Disposal Plan

This DMP addresses only the remediation and disposal of waste associated with SWMU-1. This DMP does provide for disposal of any future waste streams associated with the Refinery.

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9.0 References

Environmental Protection Agency [EPA] 1992. Method 1311: Toxicity Characteristic Leaching Procedure, part of Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. July.

EPA 1998. Federal Register Volume 63, No. 229. 40 CFR Part 260, et al. HWIR-Media Final Rule. November.

EPA 2004. Method 9095B: Paint Filter Liquids Test, part of Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. November.

MPC 2021a. Response to Approval with Modifications, SWMU-1 Revised Investigation Report, Marathon Petroleum Company LP, Gallup Refinery (dba Western Refining Southwest, Inc) EPA ID# NMD000333211. April.

MPC 2022a. Request for No Longer Contained-In Determination, Solid Waste Management Unit 1, Western Refining Southwest LLC - dba Marathon Gallup Refinery, EPA ID# NMD000333211. September 14.

MPC 2022b. Response to Approval with Modifications, Request for a "Contained-In" Determination for Contaminate Media Associated with SWMU 1, Aeriation Lagoons AL-1 and AL-2, and Evaporation Pond EP-1, Western Refining Southwest LLC - dba Marathon Gallup Refinery, EPA ID# NMD000333211. December.

New Mexico Administrative Code (NMAC) 2007a. Title 20 - Environmental Protection Chapter 9 – Solid Waste Part 8 Section 16 - Sludge. (20.9.8.16). August.

NMAC. 2007b. Title 20 – Environmental Protection Chapter 9 – Solid Waste Part 2 – Special Waste Requirements, Section 19 - Manifest Requirements. (20.9.8.19). August.

NMAC. 2007c. Title 20 – Environmental Protection Chapter 9 - Solid Waste Part 2 - Special Waste Requirements. (20.9.8). August.

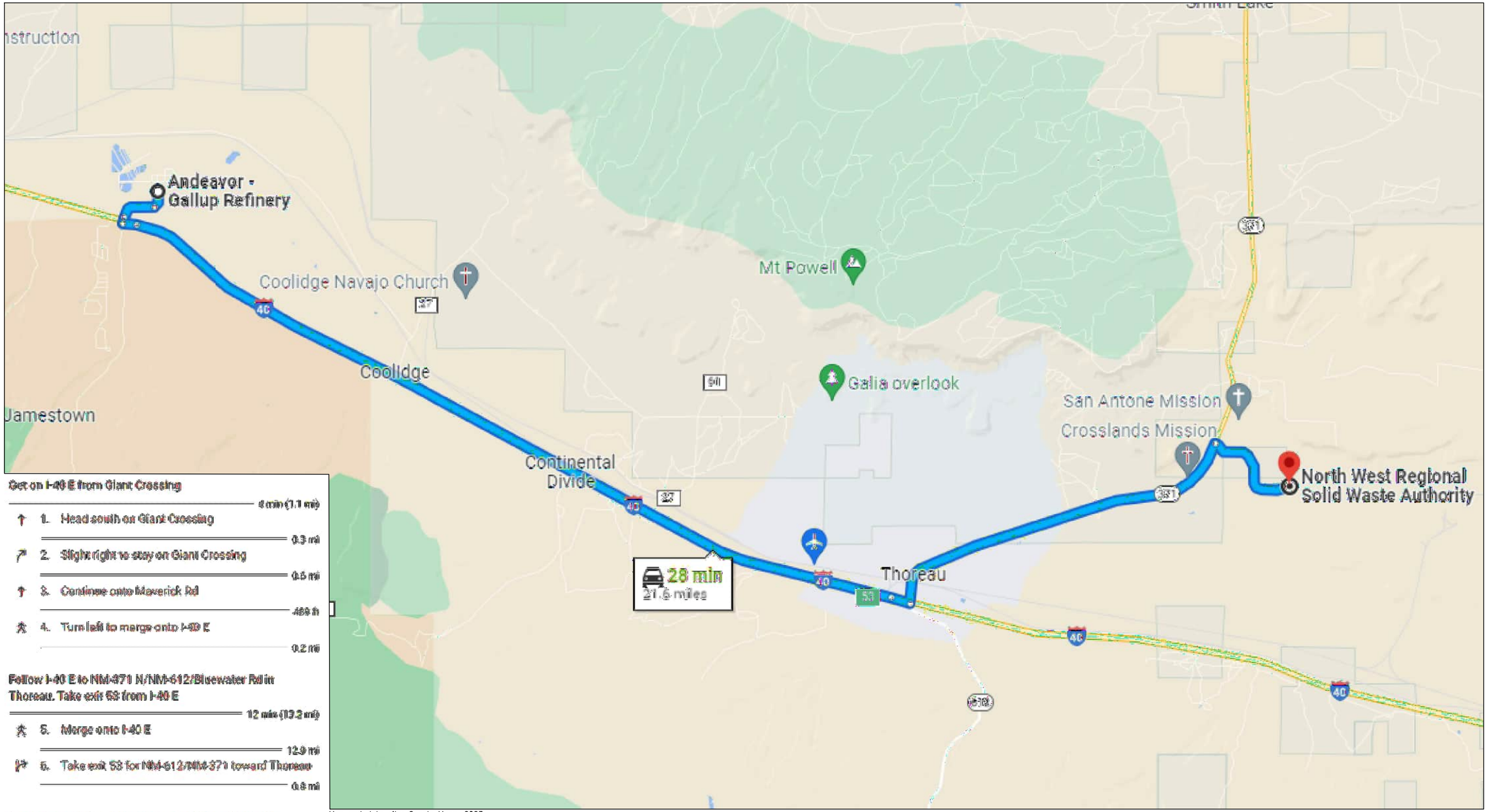
NMAC. 2007d. Title 20 – Environmental Protection Chapter 9 - Solid Waste Part 4 - Solid Waste and Registered Facility Maximum Size, Siting Criteria, and Design Criteria Section 17 - Research, Development, and Demonstration Permits (20.9.4.17). August.

NMED. 2022a. Final RCRA Post-Closure Permit, Western Refining Company Southwest, LLC, Gallup Refinery, EPA ID # NMD00333211. February.

NMED 2022b. NMED video conference with MPC to discuss SWMU-1 Closure Plan Comments. January 24.

NMED 2022c. Approval with Modifications, Request for a "Contained-In" Determination for Contaminate Media Associated with SWMU 1, Aeriation Lagoons AL-1 and AL-2, and Evaporation Pond EP-1, Western Refining Southwest LLC - dba Marathon Gallup Refinery, EPA ID# NMD000333211. November.

Attachment A – Transportation Route



Map and data cite: Google Maps, 2023.

TRAVEL ROUTE:

ANDEAVOR - GALLUP RE NERY, 92 GIANT CROSSING, JAMESTOWN, NEW MEXICO 87347 TO NORTH WEST DRIVE 21.6 MILES, 28 MIN REGIONAL SOLID WASTE AUTHORITY, 101 RED MESA BLUFFS DR, THOREAU, NEW MEXICO 87323 (TOTAL DRIVE: 21.6 MILES, 28 MINUTES)

N

0 8 MILES

Trihydro CORPORATION
1252 Commerce Drive
Laramie, Wyoming 82070
www.trihydro.com
(P) 307/745.7474 (F) 307/745.7729

FIGURE 1

TRAVEL ROUTE

ANDEAVOR - GALLUP REFNERY
JAMESTOWN, NEW MEXICO

Drawn By: JLP	Checked By: BF	Scale: 1" = 8 MILES	Date:2/13/2023	File: 697_TRAVELROUTE-2023

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Attachment B – Waste Manifest

SPECIAL WASTE MANIFEST		Manifest Document No.	Page 1 of

GENERATOR

Generator's Name	Generator's Address	Generator's Telephone No.

Origin of Special Waste (Project or Spill Location):

Transporter #1 Company Name	Address	Telephone No.
Transporter #2 Company Name	Address	Telephone No.
Destination Facility Name/Site Address	Facility ID (Permit) Number	Telephone No.

Type and Proper Name of Special Waste	Container(s) No.	Container(s) Type	Total Quantity	Unit Wt/Vol	

Additional Descriptions for Special Waste Listed Above:

Special Handling Instructions:

GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described above by type and proper name of the special waste, and that such waste has been managed, packaged, containerized and labeled in accordance with the requirements of 20.9.8 NMAC (Special Waste Requirements) in addition to any other applicable federal, state or local regulations.

Printed/Typed Name:	Signature:	Date:

TRANSPORTER

Transporter 1 Acknowledgement of Receipt of Special Waste

Printed/Typed Name:	Signature:	Date:

Transporter 2 Acknowledgement of Receipt of Special Waste

Printed/Typed Name:	Signature:	Date:

FACILITY

Discrepancy Indication Space:

Facility Owner or Operator: ***I hereby acknowledge receipt of the special waste as indicated upon this manifest, except as noted above in the Discrepancy Indication Space.***

Printed/Typed Name:	Signature:	Date:

Appendix E – Example Soil Sampling Form

APPENDIX E. FIELD FORM

Soil Field Form

Project Name: _____ Sample Media: _____
Sample ID: _____ Sample Date: _____
Sample Location: _____ Sample Time: _____
Samplers: _____ Photo Taken? (Y/N) _____
Weather: _____

Sample Description

Sampling Equipment: _____
Sample Depth: _____
Sample Recovery: _____
Latitude: _____
Longitude: _____

Sample Description: (Color, grain size, odor, organic matter, etc.) _____

ATTACHMENT B

REDLINE / STRIKEOUT COMPARISON OF THE SWMU-1 CORRECTIVE MEASURES IMPLEMENTATION WORK PLAN (FEBRUARY 2023) WITH THE ORIGINAL SWMU-1 CLOSURE PLAN (SEPTEMBER 2021)

(PLEASE SEE ATTACHED CD)

WESTERN REFINING SOUTHWEST LLC, D/B/A

MARATHON GALLUP REFINERY

SWMU-1 ~~CLOSURE PLAN~~CORRECTIVE MEASURES IMPLEMENTATION WORK PLAN

~~SEPTEMBER 22, 2021~~

MARCH 15, 2023


MARATHON

Executive Summary

Trihydro Corporation ~~(Trihydro)~~ has prepared this Corrective Measures Implementation Work Plan (CMIWP), formerly the SWMU-1 Closure Plan ~~(Plan~~) to address environmental impacts associated with Solid Waste Management Unit (SWMU~~))~~-1 at the Marathon Gallup Refinery (Refinery), owned and operated by Western Refining Southwest LLC. SWMU-1 consists of the former aeration lagoons (ALs) (AL~~--~~1 and AL-2) and an evaporation pond (EP) (EP-1). ~~Lagoons~~ AL~~--~~1 and AL-2 were formerly operated as a biological treatment unit for the treatment of Refinery wastewater. This Plan describes the activities necessary to complete corrective action associated with ~~AL~~SWMU-1 ~~and AL-2~~ at the Refinery in ~~2022~~2023.

~~Closure~~Corrective action of SWMU-1 involves submittal of this ~~Plan~~CMIWP to the New Mexico Environment Department (NMED) Hazardous Waste Bureau, ~~Plan~~CMIWP approval by NMED, and implementation of the approved ~~Plan~~CMIWP. Implementation will involve excavation of SWMU-1 accumulated sludge (waste), waste stabilization for transportation if needed, waste transportation, and disposal at a permitted Treatment, Storage, and Disposal Facility (TSDF~~) or recycled as an oil bearing secondary material at another Marathon Refinery.~~). AL-1 and AL~~--~~2 ~~wastes are classified as~~ contain F-listed (F037/F038) hazardous waste due to malfunctioning aerators as ~~approved~~determined by ~~the New Mexico Environment Department (~~NMED~~)~~ (NMED 2017). Based on ~~June 30, 2021 (Suzuki 2021).~~ sampling conducted EP-1 sediments do not likely contain a characteristic hazardous waste ~~is~~. However, NMED has documented that releases of hazardous waste into EP-1 may have occurred (NMED 2022a). Therefore, Marathon Petroleum Company (MPC) has requested a No Longer Contained-In (NLCI) determination (MPC 2022a) to manage the sludges and soil removed from SWMU-1 as non-hazardous~~.--~~ or as a special waste. NMED issued an Approval with Modifications for the NLCI request (NMED 2022b) and responses to comments were submitted by Marathon Petroleum Corporation (MPC 2022b).

This Plan is submitted pursuant to the requirements of the Refinery's Resource Conservation and Recovery Act ~~(RCRA)~~ Post-Closure Permit issued in October 2013 and modified in September 2017. SWMU-1 Corrective Measures will meet the Refinery's RCRA Post-Closure ~~Performance Standards as provided in the Code of Federal Regulations (CFR) Chapter 40 264.111(a), (b), and (c).~~Permit (Section IV.H.7) (NMED 2022c). The Refinery will utilize the NMED Residential ~~Soil Standards~~soil screening levels (SSLs) and United States Environmental Protection Agency Regional Screening Levels to guide the removal of sludge. ~~In the event that Residential Soil Standards cannot be met, the Refinery will utilize the NMED Industrial and Commercial Soil Standards with requisite institutional controls to complete the corrective action~~Achieving "clean closure" is not anticipated; therefore, removal of impacted material to reach industrial/commercial SSLs (1 foot [ft] below ground surface [bgs]) and construction worker SSLs (1 ft bgs to 10 ft bgs) with institutional controls is the likely outcome.

SWMU-1 ~~closure~~corrective action will include excavation and removal of the accumulated sludge, followed by confirmation sampling and laboratory analysis, submission of the laboratory analysis to the NMED, and transportation and disposal of the waste to an approved disposal facility. Following sludge removal, an interceptor trench ~~will~~may be installed within AL-1 to ~~collect groundwater in the area and convey it to the existing and future groundwater treatment systems. Installing a trench in AL-1 will~~ reduce the potential of impacted groundwater contacting clean backfill in ~~both AL-1 and AL-2~~the area. The proposed groundwater

interceptor trench will be installed if deemed necessary dependent on site conditions and if the excavation is deep enough to intersect groundwater. Backfilling of AL-1 and AL-2 will generally match the existing grade using clean backfill, following NMED approval of the extents of excavation.

Excavation and backfill of ~~AL~~SWMU-1 ~~and AL-2 will be completed in 2022 and EP-1 will~~is anticipated to be completed in 2023. To meet these milestones, the contractor evaluation and selection process will occur in the ~~third and fourth quarters~~second quarter of ~~2021~~2023. This process will determine sludge management methodology (excavation, handling, and loading, etc~~.) and the final disposal facility.~~). Post-excavation sampling of individual waste stockpiles (one 5-point composite sample per 250 cubic yards stockpile will determine the ultimate disposition of the waste (i.e., hazardous / nonhazardous) as required in the NLCI. In general, waste excavation will involve establishment of work areas, including an exclusion zone and decontamination zone, as necessary. Berms will be established around the waste handling areas to contain any storm water run-on/runoff. Any accumulated storm water and water from waste dewatering will be removed by vacuum truck and transported to the Refinery's permitted wastewater treatment system.

Final grading of SWMU-1 will provide a relatively flat surface for potential future Refinery use while maintaining positive drainage to reduce ponding.

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Acronyms

ABTU	aggressive biological treatment unit
amsl	above mean sea level
AL	aeration lagoon
bgs	below ground surface
CAFO	Consent Agreement and Final Order
CMIWP	Corrective Action Plan
CMIWP	Corrective Measures Investigation Work Plan
CFR	Code of Federal Regulations
decon	decontamination
DMP	Disposal Management Plan
DRO	diesel range organics
EP	evaporation pond
FID	flame ionization detector
ft	foot or feet
ft^2	square feet
GPS	global positioning system
GRO	gasoline range organics
~~Hall~~	~~Hall Environmental Laboratory~~
HASP	Health and Safety Plan
HAZWOPER	hazardous waste operations
I-40	Interstate 40
LCS	Laboratory Control Spike
MPC	Marathon Petroleum Corporation

Acronyms (continued)

MRO	motor oil range organics
NLCI	no longer contained in
NM	New Mexico
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NOD	Notice of Disapproval
OM&M	Operation, Maintenance, and Monitoring
~~OBSM~~	~~Oil-Bearing Secondary Material~~
PID	photoionization detector

~~Acronyms (continued)~~

PM	Project Manager
QA/QC	quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
~~RSL~~	~~regional screening level~~
Refinery	Western Refining Southwest LLC, D/B/A Marathon Gallup Refinery
SSL	soil screening levels
SVOC	semi-volatile organic compound
SWB	Solid Waste Bureau
SWMU	solid waste management unit
TCLP	toxicity characteristic leaching procedure
TP	test pit
TPH	total petroleum hydrocarbons
Trihydro	Trihydro Corporation

TSDF	Treatment, Storage, and Disposal Facility
USEPA	United States Environmental Protection Agency

Acronyms (continued)

UAS	unmanned aerial survey
VOC	volatile organic compound
Western	Western Refining
WWTP	Wastewater Treatment Plant
yds^3	cubic yards


MARATHON

1.0 Introduction

Trihydro Corporation (Trihydro) has prepared this ~~Closure~~Corrective Action Plan (~~Plan~~CMIWP) of Solid Waste Management Unit (SWMU) 1 ~~(SWMU-1)~~ for Western Refining Southwest LLC, D/B/A ~~the~~ Marathon Gallup Refinery (Refinery). The Refinery is located approximately 17 miles east of Gallup, McKinley County, New Mexico (NM) along the north side of Interstate 40 (I-40) (Figure 1-1). The physical address is I-40, Exit #39, Jamestown, NM 87347. The Refinery property covers approximately 810 acres.

SWMU-1 consists of two former aeration lagoons (ALs) (AL-1 and AL-2) and an evaporation pond (EP) (EP-1) (Figure 1-2). AL-1 and AL-2 were formerly operated as an aggressive biological treatment unit (ABTU) for the treatment of Refinery wastewater. Following ABTU treatment, water flowed by gravity to EP-1 for initial evaporation, followed by gravity flow to several downstream ~~evaporation ponds~~EPs, which are within SWMU-2 and are not a part of SWMU-1. SWMU-1 was constructed in 1987 and operated until 2013, when it was replaced by the current system, including a new aeration basin.

The remediation at SWMU-1 involves submittal of this ~~Plan~~CMIWP to the New Mexico Environment Department (NMED) Hazardous Waste Bureau, ~~Plan~~CMIWP approval, and implementation of the approved ~~Plan~~CMIWP. Implementation will involve excavation of SWMU-1 accumulated sludge (waste~~),~~) and associated impacted soil, waste stabilization for transportation if needed, waste transportation, and disposal at a permitted Treatment, Storage, and Disposal Facility (TSDF~~) or recycled as an oil-bearing secondary material (OBSM) at another Marathon refinery.~~).

This ~~Plan~~CMIWP is submitted pursuant to the requirements of the Refinery's Resource Conservation and Recovery Act (RCRA) Post-Closure Permit~~, issued in October 2013 and modified in September 2017. SWMU-1 will meet the Closure Performance Standards as provided in the Code of Federal Regulations (CFR) Chapter 40 264.111(a), (b), and (c).~~ (NMED 2022c). The Refinery will utilize the NMED ~~Residential Soil Standards~~soil screening levels (SSLs) (i.e., residential, industrial/commercial, and construction worker) and United States Environmental Protection Agency (USEPA) Regional Screening Levels ~~(RSLs)~~ to guide the removal of sludge. ~~In the event that Residential Soil Standards cannot be met, the Refinery will utilize the NMED Industrial and Commercial Soil Standards~~Achieving "clean closure" is not anticipated; therefore, removal of impacted material to reach industrial/commercial cleanup standards (1 foot [ft] below ground surface [bgs]) and construction worker standards (1 ft bgs to 10 ft bgs) with ~~requisite~~ institutional controls ~~to complete~~as the ~~corrective action~~likely outcome.

Following ~~excavation and verification sampling that all waste has been removed~~sludge removal, an interceptor trench ~~will~~may be installed within ~~the bottom of~~ AL-1 and EP-1 to ~~prevent groundwater from impacting clean backfill. The AL-1 trench will protect both AL-1 and AL-2 by depressing the groundwater surface in the area to~~ reduce the potential ~~for~~of impacted groundwater ~~from~~ contacting clean backfill~~.~~ in the area. The proposed groundwater interceptor trench will be installed if deemed necessary dependent on site conditions and if the excavation is deep enough to intersect groundwater. The ~~aeration lagoons~~ALs will be backfilled with clean borrow soil and graded to promote positive drainage and to match the surrounding existing topography.

Based on the use of AL-1/AL-2 as an ABTU and ~~with the concurrence of NMED (NMED 2019a),~~that there were documented aerator failures, AL-1 and AL-2 ~~waste is classified as~~ sediments are considered to contain F-listed (F037/F038) hazardous waste~~.~~ as determined by NMED in 2017 (NMED 2017). SWMU-1 was sampled as part of an investigation conducted in January 2020 (MPC ~~2021~~2021a) to characterize SWMU-1 waste as a first step in ~~closure~~the corrective action plan preparation. Based on sampling conducted EP-1 ~~was determined to~~sediments do not ~~be~~ likely contain a ~~listed~~characteristic hazardous waste. However, NMED has documented that releases of hazardous waste ~~but was~~ into EP-1 may have occurred (NMED 2022a). Therefore, Marathon Petroleum Company (MPC) has requested a No Longer Contained-In (NLCI) determination (MPC 2022a) to manage the sludges and soil removed from SWMU-1 as non-hazardous or as a special waste. NMED issued an Approval with Modifications for the request (NMED 2022b) and responses to comments were submitted by MPC (MPC 2022b). As a result, SWMU-1 waste will be sampled ~~for characteristics~~post-excavation and will be managed accordingly (i.e., hazardous or nonhazardous per comparison of post-excavation stockpile analytical data against criteria provided in Title 40, Code of Federal Regulations Part 261 – Identification and Listing of Hazardous Waste) .

This ~~Plan~~CMIWP describes the activities necessary to ~~close~~address SWMU-1 at the Refinery. This Plan provides a history of SWMU-1, the standards that will be met for ~~closure~~the corrective measures, the plan for field implementation, and the sampling and analysis plan to verify ~~clean closure~~corrective action.

1.1 ~~Closure~~Corrective Measures Performance Standards

This Plan is submitted pursuant to the corrective action requirements of the Refinery's RCRA Post-Closure Permit~~. SWMU-1 will meet the Closure Performance Standards as provided~~ (Section IV.H.7) (NMED 2022c). As mentioned in the ~~CFR Chapter 40 264.111(a), (b), and (c):~~

~~a) Minimizes the need~~NLCI request, NMED approved Western's preferred conceptual remedy of a dig-and-haul solution for ~~further maintenance; and~~AL-1, AL-2, and EP-1 (SWMU-1) in March 2021. Per Section IV.H.6.d.i. of the Permit, all remedies must meet the following threshold criteria:

(1) ~~b) Controls, minimizes, or eliminates, to the extent necessary to protect~~ Be protective of human health and the environment~~, post-closure escape of hazardous waste,~~: implementation of the remedy results in in conditions at the former SWMU that are not and do not have the potential to be immediately dangerous, acutely hazardous, or chronically hazardous ~~constituents, leachate, and contaminated run-off,~~to human or ~~hazardous waste decomposition products to the ground or surface waters or to the atmosphere;~~ecological receptors and all remedial standards have been met (see criterion #2 below).

~~c) Complies with the closure requirements of this part [264.111]; including, but not limited to, the requirements of 264.178, 264.197, 264.228, 264.258, 264.280, 264.310, 264.351, 264.601 through 264.603, and 264.1102.~~

(2) Attain media cleanup standards: the SWMU-1 excavation will be protective of human health and the environment consistent with current land use of the property, by removing impacted material to reach

industrial/commercial cleanup standards (1 foot [ft] below ground surface [bgs]) and construction worker standards (1 ft bgs to 10 ft bgs), as well as the addition of institutional controls as part of the corrective action.

(3) Control the source or sources of releases so as to reduce or eliminate, to the extent practicable, further releases of contaminants that may pose a threat to human health and the environment: as SWMU-1 was no longer used prior to idling of the facility, no further environmental degradation is anticipated in the SWMU. Furthermore, excavation remedies remove contaminants and therefore eliminate or reduce sources of direct exposures to humans and environmental receptors.

(4) Comply with applicable standards for management of wastes: this criterion will be met through implementation of the post-excavation NLCI verification sampling as well as the special waste DMP for solid waste management and disposal.

In collaboration with NMED, the Refinery anticipates ~~Closure Plan~~CMIWP approval in ~~2021 or~~ early ~~2022, with excavation of AL-1 and AL-2 in 2022, and excavation of EP-1 in~~ 2023~~.~~, with excavation of SWMU-1 efforts to follow shortly after. An excavation completion report ~~will~~is anticipated to be prepared in ~~2022~~2024 for ~~AL-~~SWMU-1 ~~and AL-2~~ work~~; a second report will be provided for EP-1 when excavation is completed in 2023~~. Once the corrective action has been approved, the Refinery will submit a Class 3 Permit Modification and Long Term Monitoring and Maintenance Plan as described in Condition IV.G of the RCRA permit. The Class 3 Permit Modification will change the status of SWMU-1 from "corrective action required" to "corrective action complete." The timeline of the ~~closure of~~corrective measures for SWMU-1~~, approved by NMED~~, is provided in Appendix A.

1.2 Facility Information

Information regarding the Refinery ownership is below:

Owner/Operator:	Western Refining Southwest LLC 92 Giant Crossing Road Gallup, ~~New Mexico~~ NM 87301	(Postal Address)
	Western Refining Southwest LLC I-40, Exit 39 Jamestown, ~~New Mexico~~ NM 87347	(Physical Address)

The Refinery is situated on 810 acres that are largely located within the lower one quarter of Section 28 and throughout Section 33 of Township 15 North, Range 15 West of the New Mexico Principal Meridian. A small component of the property lies within northeastern one quarter of Section 4 of Township 14 North, Range 15 West.

The Refinery was built in the 1950s within a rural and sparsely populated section of McKinley County in Jamestown, NM, 17 miles east of Gallup, NM. The nearest population centers are the Pilot Flying J Travel Center refueling plaza, the Interstate 40 highway corridor, and a small cluster of residential homes located on the south side of I-40 approximately 2 miles southwest of the Refinery (Jamestown).

Currently the Refinery is indefinitely idled. When operating, the Refinery is a petroleum refinery that processes crude oil transported by pipeline or tanker truck from the Four Corners region. The Refinery can receive natural gas feed stock from the Western Refining Southwest LLC – Wingate Plant. When operating, process operations at the Refinery include~~:~~ crude distillation, reformer, fluidized catalytic cracker, alkylation, sulfur recovery, merox treater, and hydrotreater. The Refinery is capable of producing gasoline, diesel fuels, jet fuels, kerosene, propane, butane, and residual fuel.

The Refinery has been indefinitely idled since August 2020. The current operations of the Refinery are limited to the Wastewater Treatment Plant (WWTP). Product is not currently stored at the Refinery and all processes have been temporarily shut down as part of the Refinery idling. All process tanks are empty, have been cleaned and inspected, and no longer store or contain material. The Refinery maintains compliance under the RCRA Post-Closure Permit.

1.3 RCRA Compliance

This ~~Plan~~CMIWP is covered by the Refinery's RCRA Post-Closure Permit (Modified September 2017) Part IV.H.7.b. The referenced portion of the permit details the elements required for a Corrective Measures Implementation Plan. The elements are listed below followed by the corresponding section (**bold**) within this ~~Plan~~CMIWP or noted deviations:

1. A description of the selected final remedy is provided in **Section 5.0**.
2. A description of the cleanup goals and remediation ~~system~~ objectives are provided in **Section 5.3 and~~-~~ 5.4**, respectively.
3. An identification and description of the qualifications of all persons, consultants, and contractors that will be implementing the remedy is required. Specific roles and responsibilities are outlined in **Section~~-~~ 1.4.**
4. Preliminary engineering design drawings and systems specifications for all elements of the remedy are required and are discussed in **Section 5.0**. Figures illustrating existing features are included along with a ~~Drawing set~~Preliminary Plan Set that details planned site work.
5. The construction plan is outlined in **Section 5.2**.
6. An operation, maintenance, and monitoring (OM&M) plan is summarized in **Section 5.~~7~~8**.
7. The results of any remedy pilot test (e.g., waste stabilization, etc.) are included in **Section 4.3** which summarizes the findings of the SWMU~~-~~-1 Test Pits excavation.

8. A plan for monitoring the performance of the remedy, including sampling and laboratory analysis of all affected media is provided in **Section 5.~~3~~4**.
9. A waste management plan is provided in **Section 5.~~2~~3**.
10. A proposed schedule for submission to the NMED of periodic progress reports is presented in **Section 5.7**.
11. A proposed schedule for implementation of the remedy is presented in **Appendix A**.

1.4 Program Management

Responsibilities of project personnel and positions that are important to the implementation and performance of the SWMU ~~1 Closure Activities~~ 1 CMIWP are described below.

- NMED Representative – the NMED Representative will have the responsibility to review this ~~Closure Plan~~CMIWP and subsequent reports submitted by the Refinery.
- ~~Refinery Representatives – the Refinery Environmental~~Marathon Representative – Marathon Corporation environmental staff (Kateri Luka, Senior HES Professional) will serve as the ~~Refinery~~Marathon Project ~~Representatives~~Representative for the SWMU ~~–~~ 1 ~~Closure Plan~~CMIWP.
- Consulting Project Team – Various consultants will be retained by the Refinery to complete the ~~closure of~~corrective action at SWMU ~~–~~ 1. Trihydro presently serves as the Refinery's consultant for implementation of field investigations and data collection efforts. Trihydro is responsible for budget control, contractor oversight and coordination, completion of field activities, and additional assessment activities as requested by the Refinery and/or NMED.
- Consultant Project Manager (PM) – the consulting ~~Project Manager (PM)~~PM has overall responsibility for ensuring that all field activities and reports meet the objectives outlined in this ~~Closure Plan~~CMIWP and the RCRA Post-Closure Care Permit. The consulting PM will report directly to the Refinery and maintain communication with the remainder of the project team. The consulting PM will work in conjunction with the Refinery to complete all necessary tasks associated with this ~~closure~~CMIWP.
- Technical Field Staff – The technical field staff implement the ~~closure~~CMIWP activities and prepare various reports and supporting materials. Technical field staff are experienced professionals who possess the degree of specialization and technical competence required to perform the required work effectively and efficiently.
- Contractors- Contractors will be selected for field activities and construction associated with this ~~closure~~CMIWP. Only contractors with appropriate certifications (i.e., hazardous waste operations [HAZWOPER] and Department of Transportation) will be included on the bidders list. The contractors will work in conjunction with the technical field staff and consulting PM. The contractor will be selected

based on experience, certifications, and specialization to perform ~~he~~the required work effectively and efficiently.

2.0 Site Conditions

The Refinery is located within a rural and sparsely populated section of McKinley County. It is situated in the high desert plain on the western flank of the Continental Divide approximately 17 miles east of Gallup, NM. The surrounding land is comprised primarily of public and private lands used for livestock grazing.

2.1 Surface Conditions

Local site topographic features include high ground in the southeast gradually decreasing to a lowland fluvial plain to the northwest. Elevations on the Refinery property range from 7,040 ~~feet (~~ft~~)~~ above mean sea level (amsl) to 6,860 ft amsl. The area near the SWMU-1 ponds is at an approximate elevation of 6,910 ft amsl (DiSorbo 2018).

Surface water features of SWMU-1 include only EP-1, AL-1, and AL-2. Additional surface water features in the area are not a part of SWMU~~-~~1. The three features that comprise SWMU-1 are blinded from the remaining surface features at the Refinery.

2.2 Subsurface Conditions

The shallow subsurface soil (alluvium) is comprised of clay and silt with some inter-bedded sand layers. Beneath the alluvium is the Petrified Forest Member of the Chinle Group, which primarily consists of interbedded mudstone, siltstone, and sandstone. The Alluvium/Chinle interface at SWMU-1 ranges from 15 ft ~~below ground surface (~~bgs~~)~~ to 32 ft bgs. Figure 2-1 shows the potentiometric surface in the area based on groundwater sampling conducted in November 2020. As shown on this figure, the prevailing groundwater flow direction is westward across SWMU~~-~~1, which is consistent with prior potentiometric surface maps in this area. Cross-sections through the SWMU-1 area are depicted on Figures 2-2 and 2-3 along with historical ranges (minimum, maximum, and average) of depth to groundwater. These cross-sections were prepared relative to the local ground surface as determined during the aerial survey conducted in November 2018. As shown in these figures, groundwater levels in wells and test pits surrounding SWMU-1 are generally below the anticipated level of the bottom of the sludge in AL-1 and AL-2. The sludge depth in AL-1 and AL-2 is estimated to be 5 to 6 ft, based on SWMU-1 sludge sampling.

Construction as-built drawings of SWMU-1 are not available, but a geotechnical design report entitled "Geotechnical Investigation Three Cell Sludge Pond," dated July 22, 1986, indicates that the plans for the lagoons included clayey soils (NMED 2017). The clay bottom was evident during the recent SWMU-1 investigation (MPC ~~2021~~2021a) as a distinct color change and abrupt decrease of waste concentrations measured via laboratory analyses as shown on Table 1.

The topographical data in Figure 2-2 are based on an unmanned aerial survey (UAS) flight conducted in November 2018 using Trihydro's UAS drone. The topographic elevation surface was generated from aerial imagery, with vertical accuracies of 0.1 to 0.2 ft in open areas. All groundwater levels were referenced to ground surface of the UAS survey, thereby providing a basis for comparison of groundwater elevations with respect to the surface water elevations in AL-1 and AL-2 observed in November 2018 during the UAS survey. The photograph on Figure 2-2 was taken at the same time as the ground survey and shows the extent of water

in the two lagoons. The water levels in the area's monitoring wells, in relation to the higher water levels in AL-1 and AL-2, suggest that seepage from groundwater into AL-1 and AL-2 is unlikely.

A cross-section was also prepared for EP-1 (Figure 2-3). As shown in this figure, the water levels in nearby monitoring wells indicates the potential for groundwater seepage into EP-1. In particular, the water level at TP-4, located adjacent to EP-1, is higher in elevation than the EP-1 surface water level. ~~The aerial photograph shown on Figure 2-3 dates from November 2018.~~ EP-1 has been mostly dry for the past several years, but accumulates surface water during monsoon rain events, which then evaporates. Outside of precipitation events, the dry condition of EP-1 indicates that the evaporation rate exceeds any seepage rate of groundwater.

3.0 SWMU-1 History

SWMU-1 consists of the former ~~aeration lagoons~~ALs, AL-1 and AL-2, and the ~~evaporation pond~~EP, EP-1 (Figure 1-2). The lagoons and the pond are located in an area approximately 280 ft by 440 ft. AL-1 and AL-2 are approximately 0.3 acres and 0.5 acres, respectively, and EP-1 is approximately 1.3 acres. The Refinery's process wastewater treatment train historically consisted of an American Petroleum Institute separator, benzene air strippers, and an ABTU consisting of AL-1 and AL-2 in series, followed by evaporation in EP-1. AL-1, AL-2, and EP-1 are earthen surface impoundments with native clay functioning as a bottom liner (DiSorbo 2018).

Western Refining (Western) requested closure of the two ~~aeration lagoons~~ALs (Western Refining 2009). NMED responded with a Notice of Disapproval (NOD) and requested additional information (NMED 2009). The disapproval noted that the original submitted plan needed to be a Corrective Measures Implementation Action Plan for a SWMU as described in the NMED fee regulations (New Mexico Administrative Code ~~2016).~~[NMAC] 20.4.2 [2006]). A Corrective Measures Implementation Work Plan (CMIWP) was subsequently submitted in July of 2009 as requested by NMED in the NOD. The CMIWP was resubmitted and also received a NOD from NMED in June of 2010 (NMED 2010).

During the time that Western was submitting the ~~Closure Plan~~plan and CMIWP, the USEPA and Western entered into a Compliance and Consent Agreement and Final Order (CAFO) (Docket No. RCRA-06-2009-0936) (USEPA 2009). A modification to the original CAFO was received by Western in 2010 (USEPA 2010). The CAFO modification was in response to an USEPA inspection of SWMU-1. The inspection identified several USEPA violations with respect to the ~~aeration lagoons.~~ALs. Pursuant to the CAFO, Western was ordered to take action and provide evidence of compliance for the milestones listed in the agreement. One of the requirements included a CMIWP to be approved by NMED. Several milestones identified included the operation of a storm water management system and an upgraded wastewater treatment system. The completion of the milestones allowed Western to discontinue operation of SWMU-1 and begin ~~closure~~corrective measures procedures. The CAFO close-out submittal and evidence of milestone completion ~~is under development and will be~~were submitted to the USEPA and NMED during ~~third~~the fourth quarter of 2021.

~~CMIWPs were submitted several times to NMED and the revised investigation work plan was approved with modifications in September 2019 (MPC 2019a) and additional modifications were submitted in December 2019 (MPC 2019b). NMED approved the modified work plan in December 2019 (NMED 2019a). The approved investigation took place in January of 2020. The investigation report was submitted in March 2020 and disapproved by NMED in August 2020. An approved investigation report with modifications was received by the Refinery from NMED in January 2021. NMED approved the modified work plan and the schedule for submittal of this closure work plan in June 2021 via email. The Refinery submitted the additional changes in April 2021. The investigation report is included in Appendix C of this report.~~

An investigation of SWMU-1 occurred in January of 2020 which included sampling of sludge and soil within AL-1, AL-2, and EP-1. The investigation provided data that allowed the estimation of the volume of sludge that will be removed from SWMU-1 and also characterized the nature of the interface between the sludge and underlying soil. The final report was submitted to NMED in January 2021 (MPC 2021a).

3.1 Waste Managed

~~By definition, the~~The lagoons served as primary and secondary separation of petroleum refinery wastewater and therefore by definition contains primary and secondary sludges (F037/F038) which is listed hazardous waste~~.~~ unless aggressive biological treatment is used. Sediments within EP-1 are not classified as hazardous waste. Based on ~~the waste investigation,~~sampling conducted EP-1 ~~was confirmed as non-~~sediments do not likely contain a characteristic hazardous ~~(~~waste. However, NMED has documented that releases into EP-1 have occurred (NMED 2022a). Therefore, MPC ~~2021).~~ requested a NLCI determination (MPC 2022a) to manage the soil removed from SWMU-1 prior to excavation of the ALs and EP planned for 2023. NMED issued an Approval with Modifications for the request (NMED 2022b) and responses to comments were submitted by MPC (MPC 2022b). As a result, SWMU-1 waste will be sampled post-excavation and will be managed accordingly (i.e., hazardous or nonhazardous per comparison of post excavation stockpile analytical data against regulatory criteria). Investigations pertaining to SWMU-1 are discussed in Section 4.0.

~~Waste removed from SWMU-1 during the excavation of AL-1 and AL-2 will be managed in accordance with applicable state and federal regulations.~~

3.2 Estimated Waste Capacity

The area of the lagoons and pond were determined using CADD software. Volumes for excavation and disposal were ~~calculated~~estimated using the areas and the average depth of contamination, and then rounded to the nearest 100 cubic yards (yds^3), with resulting waste volumes as follows (MPC ~~2021~~2021a):

- AL-1: Average depth 5.2 ft, surface area 13,789 square feet (ft^2), volume 2,700 yds^3.
- AL-2: Average depth 5.3 ft, surface area 23,211 ft^2, volume 4,500 yds^3.
- EP-1: Average depth 5.3 ft, surface area 58,757 ft^2, volume 11,500 yds^3

The Refinery understands that the actual volumes for excavation and disposal may change based on field observations and confirmation sampling during the excavation activities. The Refinery will submit the actual quantities removed in the Excavation Completion Report to be submitted following completion of the work~~.~~.

4.0 Previous Investigations

Investigations of SWMU-1 have occurred throughout the years to determine remediation efforts and ~~closure~~CMIWP requirements. Most recently, investigations were conducted in 2020 and 2021 to provide data needed to develop this ~~Plan~~CMIWP. A summary of the most recent investigations is described below.

4.1 Historical Investigations

Sampling has been conducted for soil and waste volume determination and chemical characterization several times since the construction of the ~~aeration lagoons~~ALs and EP-1. Initial soil sampling took place in the early 1990s and indicated that no significant impacts had occurred near the ~~aeration lagoons~~ALs from the operation of SWMU-1. Soil sampling was conducted every two years and then reduced to every five years by USEPA request (~~RPS JDC~~Western 2009). Groundwater monitoring wells were installed down-gradient of the SWMU-1 in 2004. GWM-1 has not been sampled since third quarter 2015 due to LNAPL detections in the well. GWM-2 and GWM-3 were not sampled in 2019 due to the lack of groundwater in the wells.

Characterization sampling was conducted in 2008 to compare the analytical results to the relevant screening levels and to calculate the approximate volume of waste that would require excavation. Sampling was conducted using a boat because of the presence of water in the ponds. Laboratory sampling analyses of the wastes consisted of total petroleum hydrocarbons (TPH)-diesel range organics (DRO) and TPH-gasoline range organics (GRO) by USEPA Method 8015, semi-volatile organic compounds (SVOCs) by USEPA Method 8270, volatile organic compounds (VOCs) by USEPA Method 8260, RCRA metals by USEPA Method 6010C, and mercury by USEPA Method 7471.

In the "Aeration Lagoons 1 and 2 and Evaporation Pond 1 Sediment Investigation" report (Trihydro 2008), standards for comparison consisted of NMED Industrial SSLs and the USEPA Maximum Concentrations of Contaminants for the Toxicity Characteristic (CFR Title 40 Part 261). The Toxicity Characteristics Leaching Procedure (TCLP) analysis was not performed. In the absence of TCLP analysis, the sample concentrations were divided by 20 and compared to the TCLP standards as the maximum theoretical leachate concentration that could be observed from the sample. This comparison was to evaluate the potential for soils to exceed the TCLP standard and was used as a screening tool. Through this comparison, 26 samples from various waste depths in the three areas exceeded the TCLP limit for mercury, and three samples from AL-1 exceeded the TCLP limit for lead.

As previously stated, the 2008 sampling was conducted when the ponds were flooded, and a boat was required for sample collection. The resulting waste depths and waste volumes were affected by the presence of water. Additional sampling took place in 2020 and is discussed below.

4.2 January 2020 Field Investigation

Sampling took place in January 2020 with the purpose of soil and waste volume determination and chemical characterization. A total of 97 samples were collected from 22 locations, including 10 waste and 12 berm locations. The 2020 samples were analyzed for free liquids to evaluate whether the water accumulating in the lagoons and pond came from outside SWMU-1 or from groundwater. ~~Approximately 6~~Over 90 percent of the

samples ~~contained~~exhibited no free liquids~~, showing~~ indicating that ~~the~~widespread groundwater infiltration is not likely, but rather water is ~~likely~~ accumulating ~~from outside the lagoons and pond (i.e.,~~at a few isolated locations as a result of precipitation~~) because the remaining samples were dry~~. This determination is supported by the cross-sections in Figure 2-2 and 2-3.

4.3 April 2021 Test Pits Investigation

An additional investigation was completed in April 2021 to confirm if shallow groundwater is present in the area surrounding SWMU-1 and if that groundwater contributes to the shallow surface water observed in the ~~evaporation ponds.~~EPs. The Test Pit ~~Investigation~~Installation Letter Report ~~will be~~was submitted ~~to~~by MPC (MPC 2021b) and approved by NMED ~~under separate cover. Following~~(NMED 2022d). Below is a summary of the investigation findings.

The investigation included excavating four 10~~-~~ to 15-ft deep test pits (TPs) outside of the internal berms (Figure 4-1). With the exception of TP-4 (adjacent to~~-~~ EP-1), groundwater was not encountered during drilling of the test pits. Damp soils were observed during excavation of TP-1 through TP-3, and water was detected in the test pits the day after installation. Drill cuttings of the test pits were sampled for disposal and indicated non-hazardous soils.

Yield testing of the test pits was conducted following the installation. The yield tests were to determine a pumping rate that would equal the recharge rate of the lagoons and pond. Of the four test pits, three locations had sufficient water for testing (TP-2, TP-3, and TP-4). The yield tests demonstrated that the groundwater has low transmissivity indicative of the clay soils. The yield tests at TP-2 and TP-3 included observing nearby monitoring wells to record any influence from the yield tests. No apparent influence was observed in the monitoring wells during the yield tests, which further indicated low transmissivity.

As shown in ~~Figure~~Figures 2-2 and 2-3, groundwater elevations in the area of SWMU-1 indicate the following:

- Surface water is ponded on the surface of the ~~aeration lagoons~~ALs after periods of precipitation.
- Groundwater levels in wells and test pits surrounding SWMU-1 are generally below the level of the bottom of the sludge in ponds AL-1 and AL-2 (approximate depth of sludge is 5 to 6 ft as determined during SWMU-1 sludge sampling).
- Groundwater surface elevation and approximate depth of sludge is provided on Figures 2-2 and 2-3.
- The groundwater levels in the area's monitoring wells, in relation to the higher water levels in AL-1 and AL-2, strongly suggest that seepage from groundwater into the ponds has likely not occurred. During excavation, ~~the bottom excavation elevation may encroach into the historical ranges of local groundwater elevations, but although this indicates the potential for flow into the excavation, the low permeability of the~~ water~~-bearing unit combined with the compacted natural clay liner of the ponds indicate that groundwater seepage into the excavation should not~~ entrained within the sludge or resulting from precipitation, will be ~~a problem. At a minimum, the seepage rate is likely low enough to~~

~~control~~controlled with standard ~~excavation~~dewatering practices, such as ~~a~~excavating shallow diversion trenches within the sludge or installation of collection sumps.

- The proposed groundwater interceptor trench will be installed ~~at~~if deemed necessary dependent on site conditions and if the excavation ~~bottom~~is deep enough to intersect groundwater. Post-~~-~~closure groundwater management is addressed in Section 5.4.

5.0 Corrective Action

SWMU-1 corrective action will include excavation and ~~removal~~disposal of the accumulated waste. A description of the planned activities is described in the following sections. Figures with aerial photography have been prepared to illustrate the location of various investigative features (e.g., test pits, etc.). ~~A~~A Preliminary Plan drawing set has been developed to illustrate planned work activities. ~~Figures~~CMIWP figures and ~~Drawings~~Preliminary Plan drawings are referenced below. A process flow chart is included in~~-~~ Section 5.2.3.

The Refinery ~~commits~~agrees to the following general elements for this ~~plan~~CMIWP:

- Excavation of ~~all~~ SWMU-1 waste ~~that meet appropriate standards~~

~~•~~ Disposal ~~and/or treatment~~ of ~~AL~~SWMU-1 ~~and AL-2 wastes as hazardous~~ waste ~~or as OBSM~~

- ~~Disposal and/or treatment of EP-1~~as dictated by post-excavation stockpile waste ~~as~~ sampling (i.e., hazardous or nonhazardous waste ~~(to be performed in 2023~~)
- Confirmation sampling of the excavation sidewall and floor, as proposed in detail below.

~~• Transportation of the waste to a permitted TSDF facility or recycled as OBSM at another Marathon refinery~~

5.1 Dewatering SWMU-1

Dewatering activities ~~began following the April 2021 field event~~are anticipated to begin in the 2nd quarter of 2023 to remove standing water in ~~the lagoons~~SWMU-1 and ~~continues~~will continue as precipitation accumulates ~~in the lagoons. The initial proposed dewatering sumps were not feasible due to the conditions encountered in the lagoons. Rather than sumps,~~. To dewater the SWMU area a suction pipe ~~was~~will be suspended in AL-1, AL-2, and EP-1 as needed to pump water ~~was pumped~~ into a frac tank using a diaphragm pump. ~~AL-1 did not contain sufficient water to pump during the April 2021 field event.~~ The collected water from the ponds ~~is~~will treated in the Refinery WWTP.

The results of investigation activities at SWMU-1 indicate that groundwater seepage into SWMU-1 is unlikely for AL-1 and AL-2. For EP-1, the seepage potential is higher, but the currently observed dry conditions of EP-1 indicates that if present, the groundwater seepage rate is ~~very~~ low. Should seepage occur into any excavation, typical construction water management methods, such as sumps or drainage ditches will be utilized to collect water for treatment through the Refinery WWTP.

~~Depending on the waste characteristics during excavation and onsite handling prior to transportation offsite, stabilization of the waste may be required. Stabilization may involve absorption of free liquids, such as water or residual separate phase hydrocarbon. Locally-available soil may be used for this purpose. Alternatively, spent zeolite catalyst is available and may be utilized as an adsorbent material if needed. Analytical characterization data for this material is presented in Appendix B.~~

5.2 Construction Plan for SWMU-1

Specific excavation and waste handling processes will be determined as part of contractor selection, and waste handling may involve proprietary processes involving stabilizers, centrifugation, or de-emulsification. Similarly, the Refinery will determine the final disposal site for the waste~~, including transportation to~~; multiple facilities may be used depending upon the ~~disposal or treatment site.~~post-excavation sampling. Specific excavation procedures are outlined below. The project area is illustrated on the Drawings Title Sheet; General Notes are provided on Drawings Sheet 1. Detailed views of the refinery and SWMU-1 work area is shown on Drawings Sheet 2.

5.2.1 SWMU-1 Site Preparation

The initial phase of work will include preparation of the SWMU-1 work area. This phase will include continued dewatering operations (as needed) as discussed in Section 5.1. Berms will be established upgradient of the ~~AL~~SWMU-1 work area to convey storm water run-on around the work area (Drawings Sheets 3 and 4). Any accumulated stormwater and water from waste dewatering will be removed ~~by vacuum truck~~ and transported to Tank 35, which is the entry point for the Refinery WWTP. ~~No surface~~Surface discharges of storm water from the work area will be ~~allowed~~prevented.

Site survey control will be established to facilitate surveying of the final base of excavation and the final graded surface. Confirmation sampling points will be located with a hand-held global positioning system (GPS) unit that will be tied into the local survey control.

5.2.2 Auxiliary Site Preparation

This activity includes preparation of a waste management area, development of the backfill borrow source, and coordination of movement of materials in and out of the SWMU-1 work area.

Borrow Area

Depending on the waste characteristics during excavation and onsite handling prior to transportation offsite, stabilization of the waste may be required. Stabilization may involve absorption of free liquids, such as water or residual separate phase hydrocarbon. Locally available soil from the Refinery's borrow area (Drawing Sheet 2) may be required for this purpose. Alternatively, spent zeolite catalyst is available and may be utilized as an adsorbent material that would be incorporated post-excavation if needed. Analytical characterization data for this material is presented in Appendix B.

~~The Refinery's onsite borrow pit will be utilized to source backfill soil.~~ The Refinery's onsite borrow pit will also be utilized to source soil for backfilling the SWMU-1 excavation. As refinery impacts have been documented below the floor of the borrow area, no borrow soil will be removed from the floor of the borrow pit. It is anticipated that borrow material will be removed from the unexcavated northern face of the borrow pit above the impacted soil. A subsurface investigation was performed via geoprobe drilling to collect soil samples that were submitted for laboratory analyses (VOC, SVOCs, metals, and TPH-DRO, -GRO, and motor oil range organics [MRO]) to document that the proposed borrow pit soil is acceptable for use as clean backfill. A discussion of the

analytical data results is provided in Section 5.6. The analytical data and a figure illustrating the boring locations is provided in Appendix 3

Site prep may include any or all of the following activities:

- Improvement of area access roads to ensure efficient flow of trucks to/from the borrow pit
- ~~Excavation of test pits within the borrow pit bank to verify the initial quantity and quality of backfill soil~~
- Stormwater management as needed to reduce the potential for excessive sediment transport

~~Waste Management/Handling~~Stockpile Area

~~Options for waste transportation include over-the-highway trucking (via trucks or roll-offs) or transport by rail. Management and loadout of trucks versus rail may require the use of a waste management/handling/~~A stockpile area~~. Design considerations to plan for these scenarios are included on Drawing Sheets 3 and 4. A waste management area site will be selected based upon the mode of transportation. Locations may include the area immediately west of AL-2 or alternatively~~ will be constructed adjacent ~~to the existing rail spur on the eastern side of the Refinery~~SWMU to provide space for placement of stabilized waste stockpiles. A primary stockpile area will be established east of EP-1 (Drawing Sheet 2). ~~The location will be selected based upon available access for roll-off containers, off-road trucks, or over-the-highway trucks.~~ A secondary stockpile area will be established if needed west of AL-2 (Drawing Sheet 2). Coordination with the Refinery will be required to determine the best route for vehicular access.

The ~~waste management~~stockpile area ~~(if needed)~~(s) will be constructed per the detail on Drawing Sheet 4. The stockpile area will be constructed on relatively flat ground with ~~all~~ vegetation removed. The resulting surface will be ~~rolled with a~~ smooth drum ~~roller~~rolled to provide a firm, unyielding surface. A sacrificial high~~-~~density polyethylene liner will be laid on the prepared surface, followed by a minimum 1 ft layer of ~~borrow~~sacrificial fill material to serve as a working surface. Berms with an equipment-mountable entrance will be utilized to prevent migration of stormwater run-on and runoff. ~~Design details for the waste management pad are provided on Drawing Sheet 4.~~ Ponded precipitation would be removed via vacuum truck for transport to Tank 35 for treatment through the WWTP.

Decontamination Area

A decontamination (decon) area will be required at the lagoons loadout area to prevent the spread of excavated waste. Waste loadout ~~(e.g., into roll-off containers)~~ will be performed in such a manner to reduce the amount of waste contacting the exterior of the ~~container or~~ truck body. Loose waste will be removed from ~~container exteriors~~truck bodies via brooms or with water spray if necessary. Decon pads will be graded such that removed waste is conveyed into sumps for removal via backhoe for management and disposal. Decon fluids within the sumps shall be removed via vacuum truck and transported to the Refinery's WWTP for treatment.

5.2.3 Waste Excavation

Waste excavation ~~will~~is anticipated to commence in AL-1 first due to its location upgradient of AL-2. ~~Conventional excavation~~ Excavation equipment ~~(e.g., track hoe, bulldozer, long-stick excavator, etc.) will~~is expected to be utilized to remove the sludge from lagoons. ~~Depending on final disposition,~~As excavation proceeds, clean borrow or berm material will be incorporated into the waste within the lagoons to improve workability. Stabilized waste will be loaded into off-road trucks for transport to ~~a waste management location or into roll-off containers or over the highway trucks~~stockpile area(s) for ~~transportation offsite.~~post-excavation sampling (Section 5.3.1).

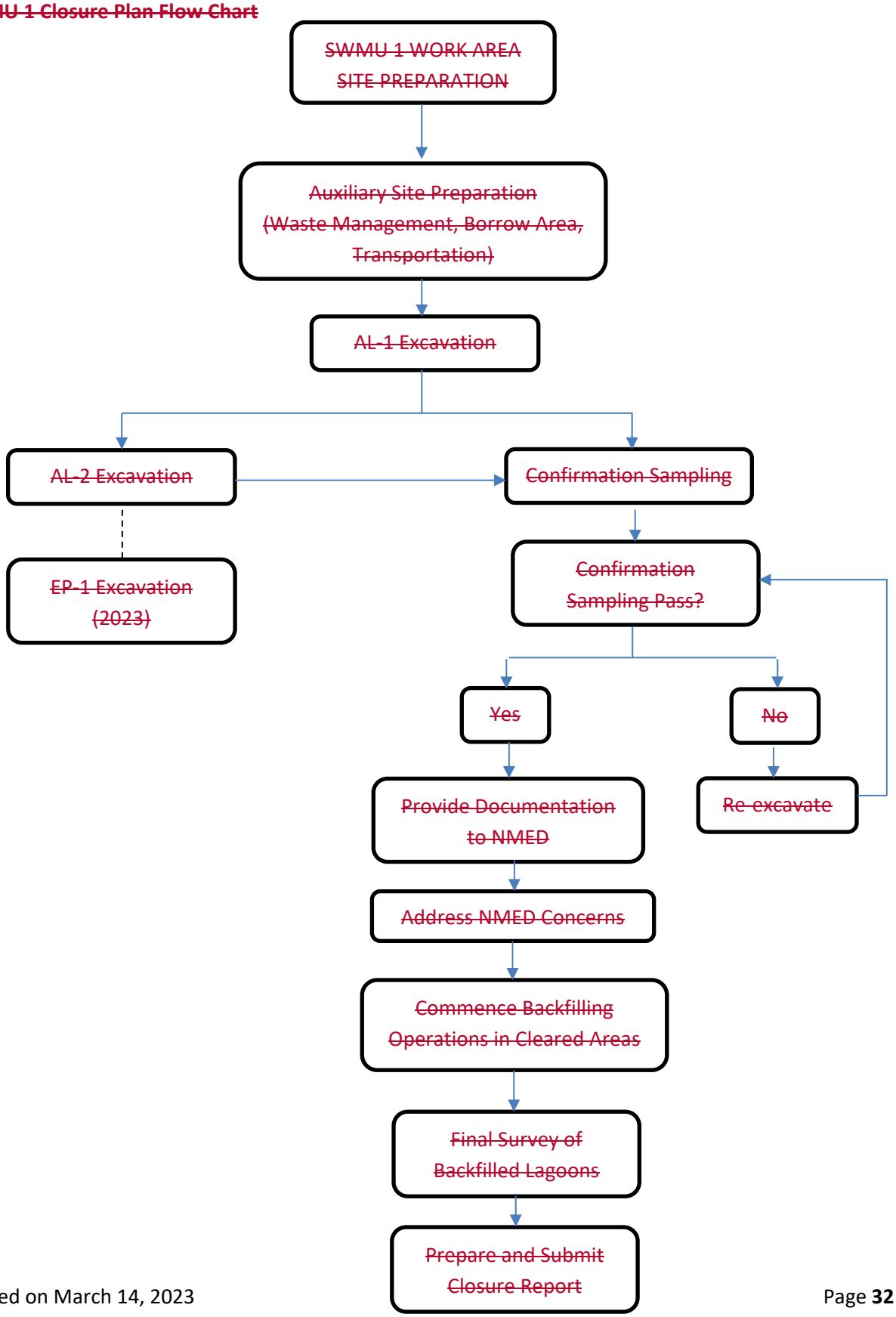
Excavation depth will be determined from field observations of a distinct color change in the clay liners of the ponds. This color change is anticipated to be accompanied by an abrupt change of contaminant concentrations, as documented in the SWMU-1 sampling results report (MPC ~~2021~~2021a) and as summarized in Table 1. As summarized in this report, flame ionization detector (FID) field screening results also exhibited a correlation with TPH-GRO, TPH-DRO and TPH-oil range organics laboratory results. ~~FID~~TOV field screening will involve ~~the standard field screening method using~~putting material in a sealed plastic bag ~~and~~ , then measuring the headspace ~~measurement using an FID.~~with a FID or a photoionization detector (PID). As an alternative, the Refinery may deploy a combustible gas indicator to screen for contaminant concentrations in situations where high moisture content soil interferes with FID operation.

~~The following flow chart depicts the sequence of work activities for the SWMU-1 closure.~~

5.2.4 Berm Excavation

The berms separating and surrounding the lagoons will be removed during the excavation process. As discussed in ~~NMED~~ correspondence ~~(~~to NMED ~~2021~~(MPC 2021a), the upper 1.5 ft of berm soil will be excavated and segregated for composite soil testing to determine suitability for use as ~~clean~~ backfill. Soil will be tested for the following constituents: VOCs, SVOCs, ~~and~~ metals, and TPH-GRO, -DRO, and -MRO at a frequency of one sample for every 100 ~~-~~ yd^3 of segregated material. The soil will be required to meet NMED Residential Soil Standards for use as backfill. Berm soil underlying the upper 1.5 ft will be segregated and evaluated for disposal at a permitted TSD facility.

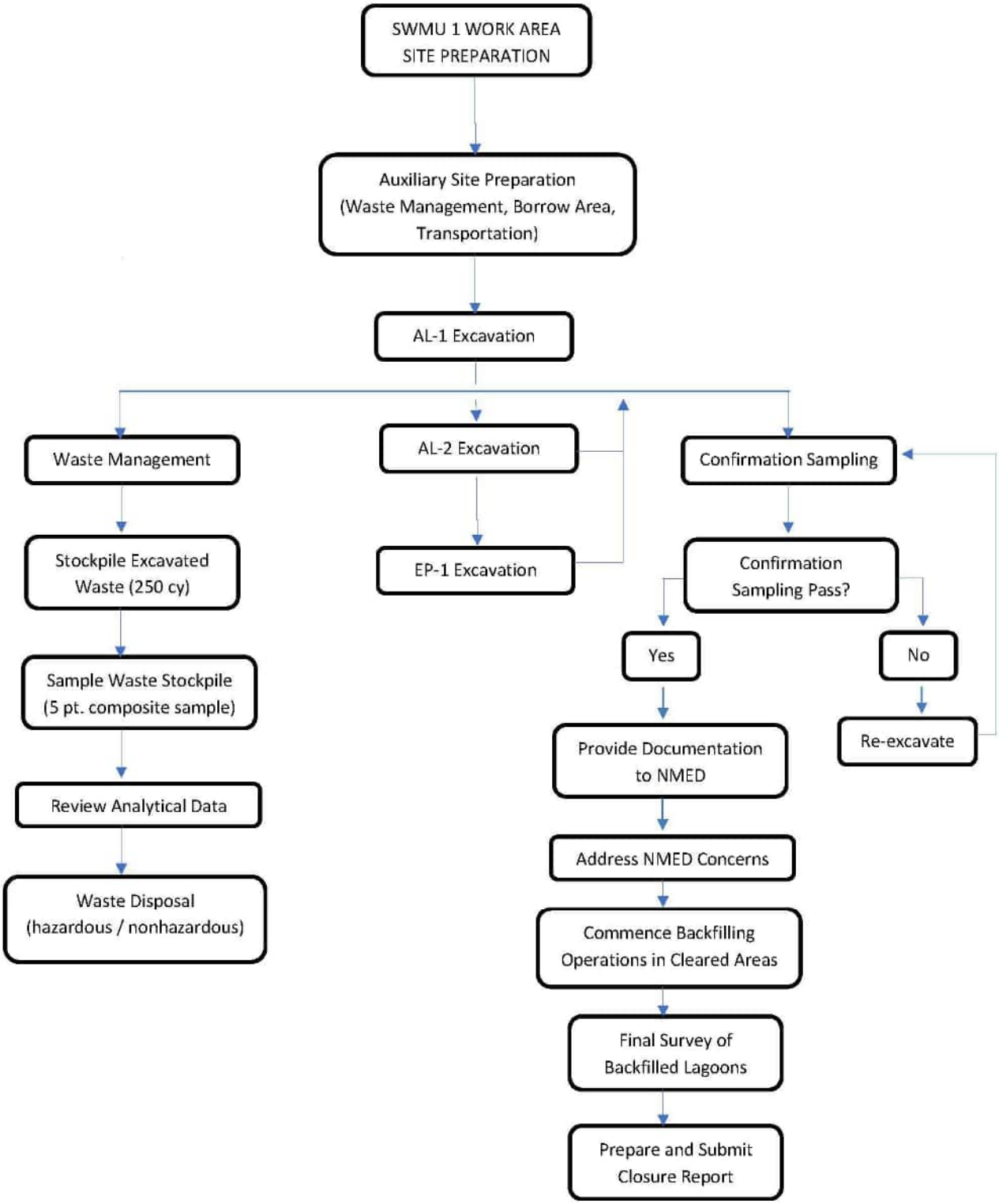
~~SWMU-1 Closure Plan Flow Chart~~



~~5.3 Closure~~

The following flow chart depicts the sequence of work activities for the SWMU-1 waste management and follow-on sampling activities. These specific tasks are detailed in Sections 5.3 and 5.4.

SWMU-1 CMIWP Flow Chart


SWMU 1 WORK AREA SITE PREPARATION
Auxiliary Site Preparation (Waste Management, Borrow Area, Transportation)
AL-1 Excavation
Waste Management
Stockpile Excavated Waste (250 cy)
Sample Waste Stockpile (5 pt. composite sample)
Review Analytical Data
Waste Disposal (hazardous / nonhazardous)
AL-2 Excavation
EP-1 Excavation
Confirmation Sampling
Confirmation Sampling Pass?
Yes
No
Re-excavate
Provide Documentation to NMED
Address NMED Concerns
Commence Backfilling Operations in Cleared Areas
Final Survey of Backfilled Lagoons
Prepare and Submit Closure Report

5.3 Excavated Waste Management

The procedure for managing waste once it is excavated from SWMU-1 is detailed below. The following procedure follows that outlined in MPC's responses to comments (MPC 2022b) to NMED's Approval with Modifications for the NLCI designation request (NMED 2022b).

5.3.1 Post-Excavation Waste Sampling and Analysis Plan

Post-excavation waste sampling will be utilized to confirm the waste excavated from SWMU-1 are not a hazardous waste as outlined in the response to NMED's Approval to the NLCI Determination Request (MPC 2022b). The excavated soils will be temporarily stockpiled into multiple separate piles within the Stockpile Area in SWMU-1. The stockpiles will be in a segregated stockpile area and managed in accordance with the temporary storage requirements of New Mexico Administrative Code (NMAC) 20.9.8, and not stored for longer than 90 days from the date the waste is placed in storage awaiting transportation, processing, or final disposal, unless the material is determined to be non-hazardous through sampling or otherwise approved by the NMED Solid Waste Bureau (SWB).

Sampling frequency for purposes of NLCI verification will be one, 5-point composite sample per 250 yds^3 stockpiled. Composite samples will be analyzed for pH, VOCs, SVOCs, , TPH-GRO, TPH-DRO, TPH-ORO, ignitability, corrosivity, and TCLP for all detected analytes shown on Table 2. Additionally, each composite sample will be analyzed for all waste acceptance criteria that may be required for the designated landfill(s). Composite aliquots will be collected at various depths and locations in the temporary stockpiles.

Post-excavation composite sample analytical results for each stockpile will be compared to TCLP screening levels and the designated landfill requirements. If the sampling analysis confirms that the excavated soil is not characteristically hazardous waste and the concentration of hazardous waste constituents do not present a threat to human health and the environment after placement in a nonhazardous waste disposal facility (i.e., the two NLCI criteria), the waste will be managed as a solid waste. If any post-excavation sampling results in values above hazardous waste TCLP screening levels, said waste will be segregated and managed per NMED requirements.

5.3.2 Disposal Management Plan

If post-excavation samples verify that the contaminated media excavated from SWMU-1 meets the two NLCI criteria required for an NLCI determination, the contaminated media would then be considered "special waste," as defined under Subsection S of NMAC 20.9.2.7 (NMAC 2007). "Special waste" is defined, in part, as "solid waste that has unique handling, transportation, or disposal requirements to assure protection of the environment and the public health, welfare, and safety, including:…(f) sludge, except; sludge that is land applied under 40 CFR Part 503 as intermediate or final cover at a landfill and meets the requirements of Subpart B of 40 CFR Part 503;…(i) petroleum contaminated soils, that have a sum of benzene, toluene, ethylbenzene, and xylene isomer concentrations of greater than 50 mg/kg, or benzene individually greater than 10 mg/kg, or a total

petroleum hydrocarbon concentration of greater than 100 mg/kg."[1] Therefore, petroleum contaminated soils that have a TPH concentration of greater than 100 milligrams per kilogram are regulated by NMED SWB as special waste.

Facilities permitted to accept certain special waste in NM require the generator to submit a Disposal Management Plan (DMP) and receive approval from the NMED SWB for each special waste accepted at the facility.[2] The DMP is provided in Appendix D.

5.4 CMIWP Sampling and Analysis Plan

Post-excavation confirmation samples will be collected from SWMU-1 ~~ponds~~excavation floors and ~~berms~~sidewalls. Proposed sampling locations will include vertical sampling of lagoon floors and horizontal sampling ~~of lagoon berms~~ and excavation sidewalls.

5.~~3~~4.1 Confirmation Soil Sampling Frequency

Following are the frequencies specified by NMED (NMED 2010) for confirmation sampling:

- Grid spacing of approximately 30 ft for all faces of the excavation (bottom and sides). This will equate to a coverage of one sample approximately every 900 ft^2 for the bottom of the excavation.
- All sidewall confirmation samples will be collected from two locations: one soil sample will be collected from the sidewall at the base of the excavation, and the other soil sample must be collected approximately ~~five~~5 ft below the base of the average pond surface water line. In areas where these dimensions are separated by less than three vertical ft, then only one sidewall sample will be collected from the base of the excavation.
- For areas requiring additional excavation, the resampling will be spaced every 20 ft to confirm removal of impacted material. This will equate to a single sample up to 400 ft^2 of re-excavated area and then an additional sample for every additional 400 ft^2 area. Re-excavated sidewalls will be sampled by collecting one sample from the base of the re-excavated sidewall at 20 ft intervals.
- Sampling below the base of the excavation will be performed by collecting samples at a total depth of 5 ft below the bottom of the excavation. The frequency of this sampling will equal ½ of the total confirmation samples collected from the base (i.e., if 20 samples are collected from the base of the excavation, then 10 samples will be collected from a depth of 5 ft below the base).

[1] *See* 20.9.2.7.S(13) NMAC for definition of "special waste."

[2] *See* New Mexico Environment Department's Guidance Document "Special Waste Management Information."
[3] *See* New Mexico Environment Department's Guidance Documents "Sludge Disposal Management Guidelines and Example."

- Additional sidewall samples will be collected from 3 ft into the sidewalls to demonstrate that contamination has not migrated laterally. The frequency of the deeper sidewall samples will be one sample per sidewall at a location approximately 5 ft below the base of the average pond surface water line.
- Each sample collected for laboratory analysis will be a discreet sample; composite sampling will not be utilized.

Samples will be analyzed for the following constituents:

- Metals~~,~~ (including Mercury), USEPA Method 6010
- SVOCs, USEPA Method 8270
- VOCs, USEPA Method 8260
- TCLP (for hazardous list)
- TPH-GRO ~~and TPH~~, -DRO, and -MRO, USEPA Method 8015
- FID/PID – Headspace sampling

The Refinery will utilize an accredited laboratory for all soil analyses. Analytical data will be screened by comparison with NMED Residential ~~soil screening levels (~~SSLs~~).~~ If Residential SSLs are not met, then Industrial and construction worker SSLs will be utilized for confirmatory sampling. USEPA Residential ~~and,~~ Industrial, and construction worker SSLs will be used where NMED standards are not established. Use of Industrial and construction worker SSLs will require the application of institutional controls and long-term operations and monitoring activities.

5.~~3~~4.2 Soil Sample Collection

Soil sampling for this ~~Plan~~CMIWP will be required for confirmation sampling following excavation, and for characterization of waste ~~as needed (e.g., berm soil that may require disposal, but is not listed hazardous waste).~~ The following procedures will be followed by field staff collecting samples during execution of this ~~Plan~~CMIWP.

5.~~3~~4.2.1 Equipment

Field screening equipment will be inspected prior to beginning work. For soil sampling, the only field monitoring equipment used will be a ~~photoionization detector (~~PID~~)~~ or other approved screening instrument. Instruments will be calibrated daily and will be operated according to manufacturer's recommendations.

The following equipment is recommended for soil sampling:

- Required personal protective equipment ~~(PPE),~~ listed in the site-specific health and safety plan (HASP)

- Soil sampling devices ~~-~~(i.e., hand auger, shovel) and stainless~~-~~-steel trowels and bowls for composite sample mixing when needed
- Sampling beaker, bottles, labels, and preservatives
- Gloves
- Chain-of-custody/sample-analysis-request forms
- PID, FID or other approved screening instrument
- ~~Global Positioning System (~~GPS~~)~~ unit
- Opaque Cooler(s) and bagged ice or frozen Blue Ice
- Detergent or solvent for cleaning monitoring equipment
- Brushes dedicated for decontamination
- Decontamination containers dedicated for wash, rinse 1, and rinse 2
- Deionized water for decontamination
- Paper towels
- Trash bags
- Field logbook

5.~~3~~4.2.2 Sample Methodology

Selection of equipment and technique should be appropriate for the volume of material required and the type of analysis to be performed. In general, the sampling equipment and technique will be chosen to minimize, to the extent possible, the amount of handling a sample will undergo prior to analysis. In many cases, the material to be sampled will be easy to access, and simple "grab" samples collected using a shovel, trowel, or drive sampler are appropriate. In other cases, such as heavily saturated samples, the soils may be difficult to access, and sampling will involve the use of specialized soil sampling equipment. ~~–~~All soil samples for laboratory analyses shall be obtained from undisturbed cores or freshly excavated soil that is representative of field conditions.

Soil samples for SVOC or metal analysis located in dry areas will be collected from representative locations using a decontaminated hand auger, shovel, ~~-~~hand trowel. The sampling device will be driven ~~completely~~ into the material manually or using a manually operated auger, drive hammer, or mallet. The ~~sampling device~~sample will then be extracted from the material using a decontaminated hand trowel or shovel ~~or trowel~~ as needed. The material will placed directly from the trowel or other appropriate sampling device into a clean glass jar. The jar

will be filled completely to minimize headspace (by tamping during filling), and immediately sealed with a Teflon-lined lid. Samples collected for VOC analyses will be obtained using Encore or equivalent sampling devices to collect undisturbed samples.

If necessary, several samples may be collected from each location to provide adequate sample volume for the laboratory. The sample containers will be labeled with indelible ink. Filled sample containers will be wiped dry and placed in a cooler with ice (or equivalent) for storage at the time of collection. Enough ice and protective packing material should be used to cool the samples to 4°C and ensure that the container remains intact prior to final packing and shipment.

Field screening may involve the use of a PID, FID~~, or approved instrument. In this case, material will be placed from the trowel or other appropriate sampling device into a plastic bag. The instrument will be inserted into the bag and the reading taken. All samples shall be screened at as close to the same temperature as possible to obtain consistent results. After collecting the reading, the material will be transferred from the bag into a clean glass jar as described above.~~ or approved instrument. In this case, the sample will be split into two aliquots. The bag containing Aliquot #1 will be sealed and shaken gently to expose the sediment to the air trapped in the container. Note that if samples are cold (i.e., below 32 degrees Fahrenheit), they will be sealed in airtight bags and warmed in a heated building and/or vehicle before screening. The sealed container will be allowed to rest while vapors equilibrate. Vapors present within the sample bag's headspace will be measured by inserting the probe of the instrument in a small opening in the bag. The PID/FID value and the ambient air temperature will be recorded on the field boring log for each interval. Aliquot #1 will be used for PID/FID screening only. Aliquot #2 will be placed into a second plastic bag, sealed, placed in a cooler, and stored on ice for potential laboratory analysis.

The Aliquot #2 materials that correspond to the sample depths selected for laboratory analysis will be transferred into the appropriate glass sample jar, labeled, and placed in a cooler. Before shipment, each cooler will be packed with ice and a laboratory-provided trip blank. A chain of custody form will accompany each sample shipment. Coolers will be sealed and delivered to an accredited laboratory. All samples shall be screened as close to the same ambient temperature as possible to obtain consistent results.

Sampling devices will be decontaminated between sampling locations using a four-stage decontamination system consisting of a two detergent/water washes and two deionized water rinses. Decontamination fluids will be containerized and treated in the Refinery's WWTP. Sample locations will be recorded with a GPS unit in order to accurately map the confirmation sampling locations.

Field logbooks, Soil Sampling Field Log~~,~~ (example provided in Appendix E), and Photograph Logs will provide a written record of field data gathered, field observations, field equipment calibrations, the samples collected for analysis, and sample custody. Color photographs will be used to substantiate and augment the field notes, if necessary. Field records will be maintained in the project file.

5.~~3~~4.3 Field QA/QC Procedures

The procedures outlined below shall be followed by the sampling team to ensure reliable data are generated during each sampling event. The sampling team will record conditions and observations in a field notebook, daily activity record sheet, or sample event activity sheet to document the sampling activities, conditions, and observations. In addition, the quality assurance/quality control (QA/QC) samples that may be used to ensure reliable data are described in the following sections:

- Blind Duplicate: Blind duplicate samples will be collected at a rate of one for every ten soil samples collected, or at a minimum of one per day.
- Equipment Blank: Equipment blanks will be collected from the hand-auger at a rate of one for every ten soil samples collected, or at a minimum of one per day.
- Trip Blank: One trip blank will be included in each cooler shipped from the Refinery to the laboratory. The trip blank will be prepared by the laboratory. The trip blank analytical results will be used to document and check for potential cross contamination during shipping.

5.~~3~~4.4 Laboratory QA/QC Procedures

The QA/QC program employed by the contract laboratory will be evaluated to document the quality of analytical data generated from each sampling event. The guidelines used will follow USEPA protocol. The results from blanks, duplicates, and spike samples will be employed to assess the validity of analytical data. The guidelines to be followed by the laboratory may include but are not limited to:

1. Method Blanks: Method blanks are “clean” matrix similar samples prepared and analyzed by the laboratory. Analysis of the method blank is used to identify laboratory derived contaminants introduced during sample preparation, extraction, and analysis. Method blanks will be analyzed at a frequency of one per sample batch or 12-hour period by the laboratory. A batch consists of three samples or less analyzed at the same time using the same method.
2. Initial Calibrations: Initial calibration standards containing both target compounds and system monitoring compounds are analyzed at a range of concentrations at the beginning of each analytical sequence. Initial calibration standards are also analyzed if the percent difference between the initial calibration and the continuing calibration is not within the method specified limits. Compliance limits specifying the acceptable range for instrument calibration are established to document the analytical instrument is capable of quantifying the target compounds within the reporting requirements.
3. Continuing Calibration Verification: Continuing calibration verifications are performed routinely to document the instrument remains within the initial calibration configuration and to demonstrate quantified data are within reporting limits. Continuing calibration standards consisting of both target compounds and system monitoring compounds are analyzed at the beginning of each 12-hour sample batch following the analysis of the instrument performance check and prior to the analysis of the method blank. The continuing calibration relative response factor will be compared to the method

specific limits. The percent difference between the initial calibration and the continuing calibration will be determined and compared to method specified limits.

4. Laboratory Control Spike (LCS) (Performance Evaluation Samples): LCSs are "clean" matrix similar samples prepared by the laboratory and spiked with a known concentration of constituents prior to extraction and analysis. The LCS is used to evaluate laboratory accuracy and method compliance. The LCS will be prepared and analyzed by the laboratory at a frequency of one per every three samples analyzed or one per sample batch.

5. Surrogate Spiking: Surrogate compounds consist of laboratory derived compounds that are introduced to each sample submitted to and prepared by the laboratory prior to extraction and analysis. The surrogate compounds spiked to each sample are specific to the laboratory analytical method. Quantification of the surrogate compounds allows for determination of matrix effects and laboratory performance on individual samples.

6. Holding Times: Samples will be analyzed within a time period beginning on the day the sample was collected and specific to the type of analysis performed. It will be the responsibility of the laboratory to meet these time constraints.

Deliverables from the laboratory, received via email, will include a standard QA/QC package with the following pertinent information, as appropriate:

- Dates Report (Procedure and Analyses Times)
- Case narrative
- Final completed chain of custody form
- Sample results
- Quality Control result summary
- Additional performance criteria specific to analytical methods
- Laboratory method detection limit identification/verification

5.~~3~~4.5 Reporting Limits

~~The applicable screening and potential cleanup levels are specified in "2019 NMED Risk Assessment Guidance for Site Investigations and Remediation" (NMED 2019b) and in the USEPA "Regional Screening Levels" (RSLs) (USEPA 2021).~~

For non-residential properties (e.g., the Refinery), the soil screening levels must be protective of commercial/industrial workers throughout the upper one foot of surface soils and construction workers throughout the upper 10 ft based on NMED criteria. ~~NMED's requirement to sample below the base of the~~

~~excavation to a depth of 5 ft along with the addition of clean soil backfill to the final grade will meet the 10 ft criteria. NMED residential soil screening levels are applied to the upper ten ft and SSLs for protection of groundwater apply throughout the vadose zone.~~ As a result, institutional controls (i.e., post-closure care) will also be implemented as part of the corrective action.

5.~~3~~4.6 Quality Assurance

The analytical sampling results will undergo data validation by Trihydro. Data qualifiers may be applied to the analytical results based on holding times, laboratory QA/QC results, and other results that could impact the quality of the data. Data qualifiers will be reported in the Excavation Completion Report.

5.~~4~~5 Installation of Groundwater Interceptor Trenches for Future Control of Groundwater

Following excavation of the waste in AL-1 and EP-1, a groundwater interceptor trench ~~will~~may be installed on the eastern, upgradient side of ~~AL~~SWMU-1 in the location shown on Drawing Sheet 3~~.~~ to reduce the potential of impacted groundwater contacting clean backfill in the area. The proposed groundwater interceptor trench will be installed if deemed necessary dependent on site conditions and if the excavation is deep enough to intersect groundwater. Based on the depth of local groundwater, the expected depth of ~~this excavation~~the trench is approximately ~~4 to~~ 5 ft bgs at the bottom of the excavation. The trench, if needed, would be constructed at the bottom of the final excavated surface. A cross section of the interceptor trench is ~~also~~ shown on Drawing Sheet 4. During backfill, a sump will be installed into the interceptor trench, which will consist of ~~-~~4-inch polyvinyl chloride pipe. This sump will be brought to the surface to allow access for pumping of the trench, if groundwater levels indicate that this is required. Groundwater from these sumps will be tied into the permanent groundwater recovery system (Phase 2) that is scheduled for completion in 2023.

~~A similar groundwater interceptor trench will be installed in EP-1 following excavation. Based on the relative depths of the AL-1 and EP-1 interceptor trenches, they may be connected during backfill of EP-1. To facilitate the connection, a blanked pipe will be installed on the north end of the AL-1 interceptor trench, along with a surface riser pipe in that location. If the relative depths do not allow connection, both interceptor trenches will contain dedicated sumps.~~

~~Groundwater from these sumps will be extracted by vacuum truck until a permanent groundwater recovery system is installed in 2022. Depending on the depth of the interceptor trenches, such a permanent system may use gravity drainage of the AL-1/EP-1 interceptor trenches into the existing Sanitary Treatment Pond French Drain frac tank.~~

5.~~5~~ 6 Excavation Backfill

Following excavation and confirmation sampling of each aerobic lagoon, NMED will be provided with analytical data and will have the opportunity to review the results prior to beginning placement of backfill.

5.~~5~~6.1 Backfill Sampling

Excavation backfill will be sourced from onsite borrow material, anticipated to be the currently existing borrow pit which provides a source of clay-rich soil. Soil samples ~~will be~~were collected from the borrow pit via ~~backhoe~~geoprobe for chemical analyses to ensure that unimpacted material is utilized for SWMU-1 backfill. ~~Soil samples will continue~~Soil borings were drilled in February 2022. The borings were positioned to ~~be collected at 500 yd^3 intervals to ensure~~determine if the ~~backfill material~~borrow pit soil is ~~approved~~acceptable for ~~use.~~fill at SWMU-1. Soil ~~will be~~was tested for the following constituents: VOCs, SVOCs, ~~and~~ metals, and TPH-DRO, -GRO, and -MRO. Appendix C provides Figure C-1 that illustrate the locations of the borings and Tables C-1 (VOCs), C-2 (SVOCs), C-3 (metals), and C-4 (DRO, GRP and MRO) provides analytical data.

~~5.5~~Laboratory analyses did indicate the presence of GRO in several of the borings on the western edge of the borrow area (i.e., BPI-1, -2, -3, -5, -10, and -11) as shown on Figure C-1. Soil from areas with GRO impacts will not be excavated for use a borrow material.

5.6.2 Backfill Operations

Backfill soil will be transported to SWMU-1 as needed. Soil will be placed in 1-ft lifts and compacted with approved equipment to create a firm, unyielding surface. Soil placement and compaction will continue until final grades are achieved as approximated in Drawing Sheet 3. The final surface will provide drainage to ~~prevent~~minimize ponding. The former SWMU-1 area will be reserved for future Refinery operations.

5.~~6~~ 7 Reporting

A summary report will be prepared that describes the excavation, waste handling, sampling and analysis, and backfilling of SWMU-1, including tables and figures. Laboratory analytical reports will also be included. The Refinery will submit ~~two reports~~one report covering the ~~AL-1/AL-2 activities scheduled for 2022 and the EP~~SWMU-1 activities scheduled for 2023~~, respectively~~ . As discussed above, the Refinery expects an interim review and approval of confirmation sampling results by the NMED. The purpose for receiving NMED approval prior to backfill will be used to ~~expedite field operations and minimize the time excavations are open~~reach agreement on remedy being reached prior to backfill.

5.~~7~~ 8 Long-Term OM&M

Long-term OM&M will include maintenance of the interceptor trenches (if installed) within SWMU-1, and inspections and maintenance (when needed) of the backfilled cover soil. Each activity is addressed below.

The proposed groundwater interceptor ~~trenches~~trench will be pumped as required to produce a hydraulic depression that will impede groundwater migration westward across the SWMU-1 footprint. Initially, this pumping will be conducted using a vacuum truck and the recovered water will be pumped into Tank 35 for treatment within the Refinery WWTP. ~~The interceptor trench sumps will be gauged on a frequent basis to ensure maintenance of the hydraulic depression.~~ The volume of water recovered will be recorded and reported as part of the Refinery's routine reporting.~~—~~ Provisions will be made to connect the trench to the groundwater collection system under construction at the Refinery.

Associated SWMU-1 storm water drainage components (cover soil, outlets, etc.) will be inspected, monthly and after major storm events, to ensure proper flow toward outfalls 1 and 2. Inspections will include checking for erosion of cover soil, drainage channels, and/or berms, identifying any growth and/or debris in drainages that may prohibit proper flow, and inspecting culverts for blockage. In the event that maintenance is required, the Refinery will address the issue as soon as practical. These inspections will be documented as part of ongoing environmental monitoring operations.

6.0 Work Contracting

The Refinery intends to solicit contractor competitive proposals and bids for the excavation, waste management and backfill of SWMU-1. ~~AL-1 and AL-2 will be excavated in 2022. EP-1 will be excavated in 2023.~~ Prospective contractors will be provided with a bid package and a bid walk will be held to enable development of competitive bids. Prospective contractors will be encouraged to propose methods of waste handling and treatment that minimize the volume of the waste and any residual hazard posed by the excavated and stabilized waste.

The Refinery expects to retain separate contractors for the SWMU-1 excavation, construction management, and environmental monitoring and sampling. All contractors will be HAZWOPER certified and will meet the qualifications lined out in USEPA regulations. The environmental contractor will provide the equipment, materials, and labor to execute the work, including sludge excavation. The Refinery anticipates that the excavation contractor will submit the following plans:

- Excavation and waste handling operations
- ~~Health and safety~~
- ~~Storm~~HASPs
- Temporary storm water management plan for construction
- General project management

In addition, the excavation contractor must provide proof of necessary health and safety training, including but not limited to HAZWOPER and Refinery-specific training.

Duties of the construction management/environmental contractor will include:

- Overall construction management authority with a direct reporting to the responsible Refinery PM
- Preparation of an organization chart, including lines of communication to the Refinery PM
- Review and approval of the excavation contractor's ~~health and safety plan~~HASP
- Daily health and safety briefing, including tailgate safety forms and job safety analysis forms
- Daily preparation of field activity daily logs, including, but not limited to progress notes, equipment used on site, number of contractor personnel
- Collection and field sampling of field screening samples, including waste description, color, and other gross characteristics
- Calibration of field equipment, such as FID and air monitoring instruments

- Documentation of waste transportation
- Collection of stockpile samples and confirmation samples for submission to the laboratory

All onsite personnel will have stop work authority. Emergency services are covered by the Gallup Fire Department.

7.0 Schedule

The schedule of ~~closure~~CMIWP activities was submitted to NMED originally in April 2021 and approved in June 2021. ~~This~~An updated schedule covering activities in 2023 is included as Appendix A. The Refinery expects ~~AL~~SWMU-1~~/AL-2~~ excavation and backfill operations to be completed in ~~2022, with EP-1 excavation and backfill in 2023~~2023. ~~Final closure reports~~A final implementation report will be submitted in ~~2022~~2024 for ~~the aeration lagoons, and in 2023 for the evaporation pond~~SWMU-1.

8.0 References

DiSorbo. 2018. Investigation Work Plan Solid Waste Management Unit (SWMU) No. 1 Aeration Basin and SWMU No. 14 Old API Separator. Gallup Refinery, Western Refining Southwest, Inc., Gallup, New Mexico. November.

~~Marathon Petroleum Corporation (~~MPC~~). 2021~~. 2021a. SWMU-1 Revised Investigation Report, Marathon Petroleum ~~Corporation~~Company LP, Gallup Refinery (dba Western Refining ~~Division. Revised~~Southwest, Inc) EPA ID# NMD000333211. January ~~5~~.

MPC. ~~2019a. 2019~~2021b. SWMU-1 ~~Soil Sampling Investigation Work Plan,~~Test Pit Installation Letter Report, Marathon Petroleum Company LP, Gallup Refinery (dba Western Refining Southwest, Inc) EPA ID# NMD000333211. October.

MPC. 2022a. Request for No Longer Contained-In Determination, Solid Waste Management Unit 1, Western Refining Southwest LLC - dba Marathon ~~Petroleum Corporation, Gallup Refining Division~~Refinery, EPA ID# NMD000333211. September 14.

MPC. ~~2019b~~2022b. Response to Approval with Modifications, ~~Investigation Work Plan~~Request for a "Contained-In" Determination for Contaminate Media Associated with SWMU-1, Aeration Lagoons AL-1 and AL-2, and Evaporation Pond EP-1, Western Refining Southwest LLC - dba Marathon ~~Petroleum Company LP, Gallup Refinery, (dba Western Refining Southwest, Inc.),~~ EPA ID# NMD000333211. December.

New Mexico Administrative Code~~.~~ (NMAC). 2006. Title 20 – Environmental Protection Chapter 4 – Hazardous Waste Part 2 – Hazardous Waste Permit and Corrective Action Fees. (20.4.2). August.

NMAC. 2007. Title 20 – Environmental Protection Chapter 9 – Solid Waste Part 2 – Solid Waste Management General Requirements. (20.9.2.7). August.

New Mexico Environment Department (NMED). 2009. Notice of Disapproval, Closure Plan Aeration Lagoons, Western Refining Company, Southwest, Inc., Gallup Refinery, EPA ID # NMD000333211, HWB-GRCC-09-003. May.

NMED. 2010. Second Notice of Disapproval, Corrective Measures Implementation Work Plan, SWMU-1, Wastewater Aeration Lagoons, Western Refining Company Southwest, Inc., Gallup Refinery, EPA ID # NMD00333211, HWB-GRCC-09-003. June.

NMED. ~~2011. Notice of Disapproval, Corrective Measures Implementation Work Plan, SWMU-1, Wastewater Aeration Lagoons, Western Refining Company Southwest, Inc., Gallup Refinery, EPA ID # NMD00333211, HWB-GRCC-09-003. January.~~

~~NMED.~~ 2017. Notification of Determination, Hazardous Waste Management Unit, Aeration Basin, Western Refining Company Southwest, Inc., Gallup Refinery, EPA ID # NMD00333211, HWB-WRG-17-MISC. February.

NMED. ~~2019a. 2019 Response to Approval with Modifications Investigation Work Plan SWMU-1, Marathon Petroleum Company LP, Gallup Refinery (dba Western Refining Southwest, Inc) EPA ID# NMD000333211. December~~2019b. 2019 NMED Risk Assessment Guidance for Site Investigations and Remediation. February.

NMED. ~~2019b. 2019~~2022a. NMED ~~Risk Assessment Guidance for Site Investigations and Remediation. February.~~

~~NMED. 2021. Response to Approval~~video conference with ~~Modifications,~~MPC to discuss SWMU-1 ~~Revised Investigation Report, Marathon Petroleum Company LP, Gallup Refinery (dba~~ Closure Plan Comments. January 24.

NMED. 2022b. Approval with Modifications, Request for a "Contained-In" Determination for Contaminate Media Associated with SWMU-1, Aeriation Lagoons AL-1 and AL-2, and Evaporation Pond EP-1, Western Refining Southwest~~, Inc)~~ LLC - dba Marathon Gallup Refinery, EPA ID# NMD000333211. ~~April~~November.

~~RPS JDC. 2009.~~ NMED. 2022c. Final RCRA Post-Closure ~~Plan Aeration Lagoons Gallup Refinery.~~ Permit, Western Refining Company Southwest, ~~Inc.,~~LLC, Gallup~~, New Mexico~~ Refinery, EPA ID # NMD00333211. February.

~~Suzuki, M. 2021. Response to~~NMED. 2022d. Approval with Modifications, ~~dated June 11, 2021 (~~SWMU-1 Test Pit Installation Letter Report, Western Refining Company Southwest, Inc., Gallup Refinery, EPA ID # NMD00333211, HWB-WRG-~~14-005). June 30 [Online]. Available email: Michaiya.Suzuki@state.nm.us~~21-018. January 3.

Trihydro Corporation (Trihydro). 2008. Aeration Lagoons 1 and 2 and Evaporation Pond 1 Sediment Investigation, Western Refining Company, Gallup Refinery, Gallup, New Mexico. June.

United States Environmental Protection Agency (USEPA). 2009. Complaint and Consent Agreement and Final Order, Docket No. RCRA-06-2009-0936. August.

USEPA. 2010. Re: Western Refining Complaint, Consent Agreement and Final Order Modification. August.

USEPA. 2021. Regional Screening Tables. May.

Western Refining. 2009. Closure Plan Aeration Lagoons, Western Refining Company Southwest, Inc., Gallup Refinery, EPA ID # NMD00333211, HWB-GRCC-09-003. February.

Figures

Preliminary Plan Set

~~Table~~ Tables

Appendix A – SWMU-1 ~~Closure~~CMIWP Timeline

Appendix B – Zeolite Catalyst Characterization Data

Appendix C – Borrow Area Sampling Laboratory Analyses

Appendix D – Disposal Management Plan

Appendix E – Example Soil Sampling Form

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 197644

CONDITIONS

Operator: Western Refining Southwest LLC 539 South Main Street Findlay, OH 45840	OGRID: 267595
	Action Number: 197644
	Action Type: [UF-DP] Discharge Permit (DISCHARGE PERMIT)

CONDITIONS

Created By	Condition	Condition Date
scwells	Accepted for Record Retention Purposes-Only	3/15/2023